

Combined Index to  
**AGRICULTURAL ENGINEERING**

*The Journal of the*  
AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS  
Volume 48 — January to December 1967

**TRANSACTIONS of the ASAE**  
Volume 10 — Nos. 1 through 6  
**ASAE CONFERENCE PROCEEDINGS**

• • • • •

**AGRICULTURAL ENGINEERING**

Issue	Pages
January . . . . .	1-60
February . . . . .	61-120
March . . . . .	121-180
April . . . . .	181-248
May . . . . .	249-308
June . . . . .	309-372
July . . . . .	373-424
August . . . . .	425-476
September . . . . .	477-530
October . . . . .	531-626
November . . . . .	627-686
December . . . . .	687-756

**TRANSACTIONS of the ASAE**

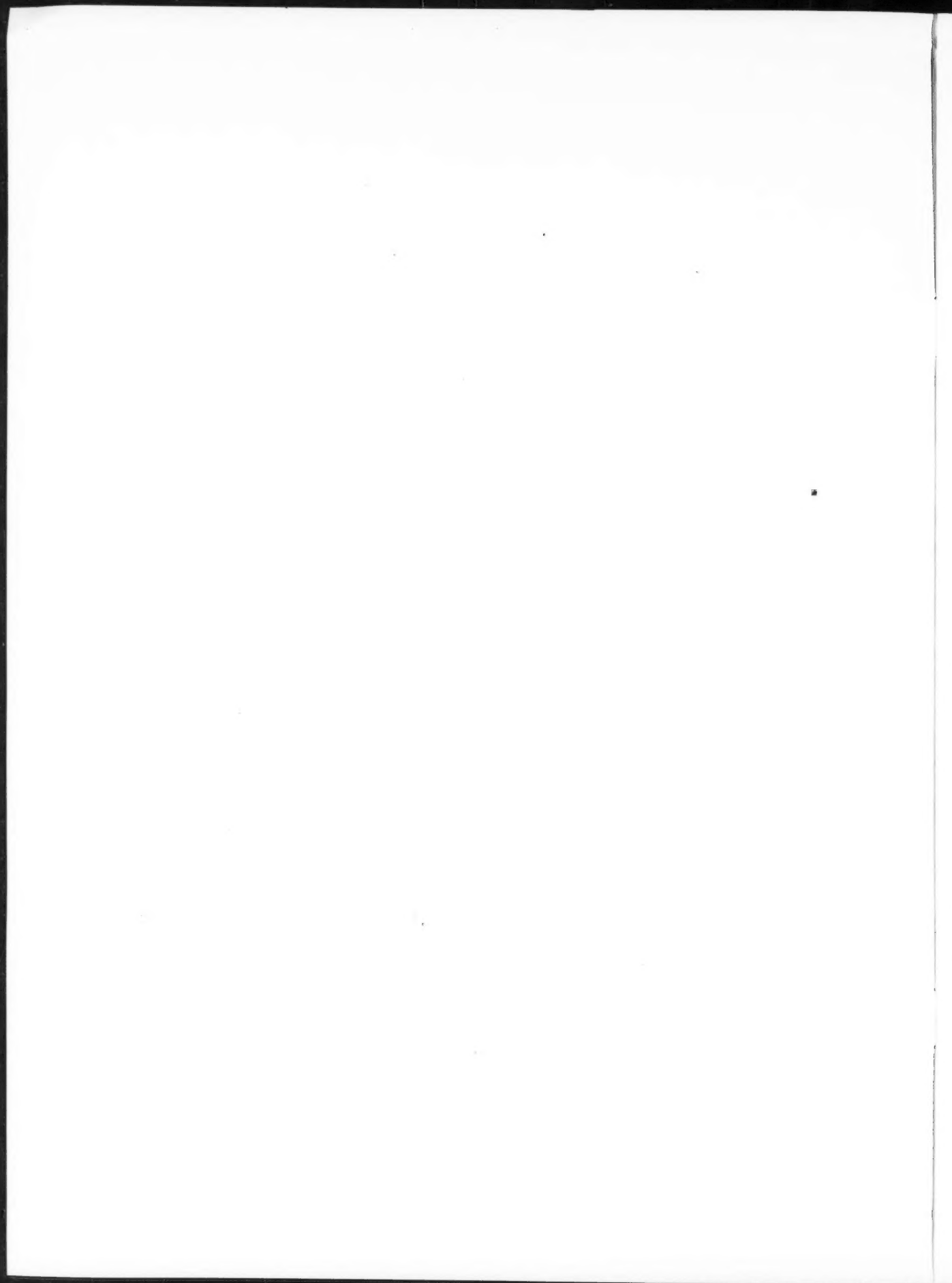
Issue	Pages
Vol. 10, No. 1 . . . . .	1-144
Vol. 10, No. 2 . . . . .	145-288
Vol. 10, No. 3 . . . . .	289-432
Vol. 10, No. 4 . . . . .	433-576
Vol. 10, No. 5 . . . . .	577-704
Vol. 10, No. 6 . . . . .	705-849

**ASAE CONFERENCE PROCEEDINGS**

Issue	Prefix	Pages
Farmstead Water Quality Improvement Seminar (PROC-167) . . . . .	WQ	1-57
Evapotranspiration and Its Role in Water Resources Management (PROC-267) . . . . .	EV	1-65
Economy Housing Seminar (PROC-367) . . . . .	EH	1-64
Field Modifications of Tractors (PROC-467) . . . . .	TM	1-42

(Page numbers with prefix "T" refer to the TRANSACTIONS of the ASAE  
— for other prefixes see "ASAE Conference Proceedings")

*Published by the*  
AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS  
ST. JOSEPH, MICHIGAN 49085



## A

Accuracy in computer evaluation of moist air properties	T 579
Accuracy of fertilizer metering by full width machines	T 62
Action programs for local area housing	EH 62
Activity network techniques applied to a farm machinery selection	T 310
Adsorption and desorption of water vapor by cereal grains and their products—Parts I, II, III	T 549
Adsorption, Neutralization, sequestration, oxidation and	WQ 24
AE IN ACTION	
Steel foil in agriculture	153
A low-cost exterior wood finish	219
Power projections produce new design concepts	346
IH new hydrostatic transmission provides precise speed ratio to match the job	405
How many pickles will this pickle harvester pick?	452
A telephone frost-warning device	560
Subsurface irrigation: how soon a reality?	654
Zero hour is now	719
Aeration of grain, Moisture changes during	T 344
Aeration on a hog lagoon, Effect of low-volume and high-volume	T 475
Aerodynamic properties of black walnuts: application in separating good from bad walnuts	T 57
Agness, J. B.	
Grain-drier control based on exhaust temperature sensing	T 110
Agricultural equipment, Insurance looks at	152
Agricultural research, Frontiers for	79
Agricultural soils, Compressive and tensile failure strengths of three	T 771
Agriculture, Evapotranspiration and weather forecasts for	EV 10
Agriculture's international research frontiers	267
Agriculture's national research frontiers	201
Air conditioning for electrically heated homes	272
Air properties, Accuracy in computer evaluation of moist	T 579
Air temperature on performance of growing-finishing swine, Effect of	T 370
Air velocity, Design and testing of a thermistor transducer to measure very low	T 769
Aircraft, Drift hazards related to ultra-low volume and diluted sprays applied by agricultural	T 628
Akesson, N. B.	
Drift hazards related to ultra-low-volume and diluted sprays applied by agricultural aircraft	T 628
Aldrich, R. A.	
Analytical determination of direct visible solar energy transmitted by rigid plastic greenhouses	T 564
Alfalfa hay, A Systems approach to harvesting	T 318
Alfalfa, leaf-strip harvester for	20
Alfalfa leaves, Design parameters for drying fluidized	T 467
Algebra analysis of switching circuits, Boolean	T 829
Allred, E. R.	
Effect of pothole drainage on deep ground-water supplies	T 643
Altman, L. B. Jr.	
Characteristics of rotary-type phase converters	T 505
AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS	
ASAE quick-attaching three-point hitch coupler standard	80
ASAE winter meeting board action	89
New ASAE structure	220
ASAE group insurance program	286
Financial statement	658
Inviting high school students to section and regional meetings	660
ASAE's cooperative standards program	662
Amernan, C. R.	
Modern infiltration theory in hydrologic analysis: a symposium—introduction	T 378
Plot and small watershed runoff: its relation to larger areas	T 464
Amoroso, J.	
Role of infiltration in nonlinear watershed analysis processes	T 396
Analog, Bridging the gap with a general-purpose	T 808
Analyses on transient heat transfer from anomalous shapes	T 236
Analysis of soil transportation by raindrop splash	T 166
Analytical description of moisture sorption of cured tobacco	T 31
Analytical determination of direct visible solar energy transmitted by rigid plastic greenhouses	T 564

Analyzing field machinery systems by computer	202
Anderson, James H.	
How to use career guidance films	345
Animals, Solar atmospheric, and terrestrial radiation received by shaded and unshaded	T 622
Annular shear device, An	T 164
Anomalous shapes, Analyses on transient heat transfer from	T 236
Apparatus for determination of bulk modulus and compressibility of materials	T 670
Apples, Mechanical harvesting and handling of processing	T 43
Apples mechanically, Harvesting processing	718
Applicability of simulation techniques to the design of hydrologic structures, The	T 460
Applicators, Design and development of new granular	T 182
Applying mulches for improving seedling emergence	T 626
Applying systemic insecticides to cotton: an equipment evaluation	646
Asparagus, Mechanical harvesting and handling of white	T 145
Automatic fillers for fruit and vegetable bins, Sensors and controls for	T 18
Automatic sprinkler systems for turf	344
Automating surface irrigation	338

## B

Back sphere thermal radiometry	T 780
Backhoe mixing and deep plowing, Soil profile modification by	T 775
Bacterial aerosol in food packaging areas, Turbulent diffusion of a	T 748
Bacteriological aspects, Lagooning of liquid manure (bovine):	T 784
Bailey, W. A.	
To record plant growth	720
Bainer, Roy	
The interrelationship of research and education	141
Baker, P. S.	
Basic principles and application techniques of isotope tracers	T 705
Bakker-Arkema, F. W.	
Drying characteristics of pea beans on single and double-drum driers	T 154
Barlowe, Raleigh	
Influence of land values on housing costs	EH 10
Barnes, K. K.	
Data needs for agricultural systems analysis	T 303
Barquest, Glenn D.	
A low-cost exterior wood finish	219
Barwick, A. J.	
Accuracy in computer evaluation of moist air properties	T 579
Basal application of systemic insecticides to cotton plants, Design and evaluation of equipment for	T 179
Basic principles and application techniques of isotope tracers	T 705
Bassett, D. L.	
Hydraulic description of recession of shallow flow over a porous bed	T 54
Batchelder, D. C.	
Applying mulches for improving seedling emergence	T 626
Baumann, E. R.	
Sedimentation, coagulation, and filtration related to farm water supply	WQ 27
Chemical feeders and filters	WQ 38
Beans, Growth chamber studies of evapotranspiration by red kidney	T 611
Becker, C. F.	
Comparison of four summer-fallow tillage methods based on seasonal tillage-energy requirement, moisture conservation, and crop yield	T 1
Bedford, C. L.	
Drying characteristics of pea beans on single and double-drum driers	T 154
Behavior of soil under dynamic loading: its application to tillage implements	T 352
Behrend, Herbert	
Mobile and factory-built houses	EH 37
Bell, Charles E. Jr.	
Techniques of program planning and development	WQ 53
Bell, E. S.	
Studies of slotted-floor swine housing in controlled, semicontrolled and uncontrolled environments	T 561
Benoit, G. R.	
Characteristics of flow to diversions and subsurface drains on a sloping Frigidpan soil	T 586
Subsurface drain and diversion discharge comparisons on a sloping Frigidpan soil	T 590
Berend, J. E.	
Use of storm runoff for artificial recharge	T 678
Berge, O. I.	
Using large electric motors	84

Besch, E. L.	
Stresses in impacted egg shells	T 364
Betscher, J. V.	
Flow properties of fluid milk products	714
Biggar, J. W.	
Field observations of infiltration and soil-water redistribution	T 382
Bin unloader for citrus pulp, A vertical screw	T 223
Biological and radiological properties of water	WQ 3
Biological material, Oxygen concentration measurements in	T 325
Birth, Gerald S.	
A fiber optics reflectance attachment	448
Bittner, D. R.	
A method of evaluating cushioning materials used in mechanical harvesting and handling of fruits and vegetables	T 711
Black-globe thermometer, Ping-pong ball into	341
Black, John M.	
A low-cost exterior wood finish	219
Black walnuts, Aerodynamic properties of	T 57
Blaisdell, John L.	
Flow properties of fluid milk products	714
Bockhop, Clarence W.	
Inviting high school students to section and regional meetings	660
Body, L. L.	
Heat transfer through masonry walls	T 123
Boersma, L.	
Water-table fluctuation in the soil series of the Willamette catena	T 405
Bond, Theodore E.	
Ping-pong ball into black-globe thermometer	341
Influence of shade height on physiological responses of cattle during hot weather	T 433
Measuring incoming 'short' and 'long' wavelength radiation with directional thermopile radiometers	T 462
Solar, atmospheric, and terrestrial radiation received by shaded and unshaded animals	T 622
Skin and lung moisture loss from swine	T 691
Bonder, Seth	
Developing planning procedures for armored-weapons systems	T 296
Bonnicksen, L. W.	
Reliability and economic analyses for structural designing	T 48
Simulators for farmstead systems analysis	T 806
Boolean algebra analysis of switching circuits	T 829
Bornstein, Joseph	
Characteristics of flow to diversions and subsurface drains on a sloping Frigidpan soil	T 586
Subsurface drain and diversion discharge comparisons on a sloping Frigidpan soil	T 590
(Bovine): bacteriological aspects, Lagooning of liquid manure	T 784
Bovine, Nonevaporative convective heat transfer from the surface of a	T 733
Bowen, H. D.	
Effect of relative humidity on the electrostatic charging process	T 201
Oxygen concentration measurements in biological material	T 325
Bowman, D. E.	
New direct-drive silo unloader	T 648
Bradley, J. D.	
Stresses in plywood gusset plates for trusses	T 633
Bradley, W. A.	
Theoretical modeling of the wheat plant	T 799
Brakensiek, D. L.	
Kinematic flood routing	T 340
Braze, R. D.	
Colloid movement in a flowing medium with an impressed electric field	T 594
Bridging the gap with a general-purpose analog	T 808
Briggs, G. F.	
Corrosion control	WQ 34
Broiler chickens, Physiomechanics of	T 170
Broiler management, Three-pen system of	148
Brooker, D. B.	
Aerodynamic properties of black walnuts: application in separating good from bad walnuts	T 57
Mathematical model of the psychrometric chart	T 558
Brooks, L. A.	
Using large electric motors	84
Brower, Gilbert K.	
How solid lubricants protect heavy machinery	268
Brown, G. K.	
Harvesting dates mechanically	T 486
Evaluating shake harvesting of oranges for the fresh fruit market	T 577
Brown, Robert H.	
The educational challenge	453

Brusewitz, G. H.	Flow characteristics in the pneumatic conveying of chopped forage	T 320
Brutsaert, Wilfried	Some methods of calculating unsaturated permeability	T 400
Bryant, R. L.	Performance of growing turkeys as affected by environmental temperature	T 793
Buchele, W. F.	Leaf-strip harvester for alfalfa	20
	Ridge-planted and plow-planted sugar beets	T 128
	Computer simulation of an unsprung vehicle	
Part I		T 272
Part II		T 277
Bucher, David H.	A protective canopy for the farm tractor	496
Buelow, F. H.	Boolean algebra analysis of switching circuits	T 829
Buildings, Frameless glazing system for wood-frame		EH 60
Bunker, A. G.	Stump to landing harvesting methods for short wood	650
Bunn, Joe M.	Analytical description of moisture sorption of cured tobacco	T 31
Buras, Nathan	Crop yield response to nonuniform application of irrigation water	T 196
Burkhardt, George J.	Effect of pitch, radial clearance, hopper exposure and head on performance of screw feeders	T 685
Busch, C. D.	Sprinkler irrigation with high salt-content water	T 494
Butchbaker, A. F.	Controlled-atmosphere storage of potatoes	T 534
	Effect of air velocity, air temperature, and mean radiant temperature on performance of growing-finishing swine	T 715
	Design and testing of a thermistor transducer to measure very low air velocity	T 769
	Performance of growing turkeys as affected by environmental temperature	T 793
Butler, B. J.	Increment of cut-and-rake angle interaction during granular incorporation by rotary tillage	T 718
Butler, R. G.	Effect of low-volume and high-volume aeration on a hog lagoon	T 475

## C

Canal linings, How to install flexible membrane	500
Cannon, M. D.	Cotton harvest-defoliation scheduling
	Canopies as plot covers, Evaluation of polyethylene
	Canopy for the farm tractor, A protective
CAREER GUIDANCE	
A recruitment program	286
How to use career guidance films	345
Organizing a mailing program to high schools	393
Industry's responsibility in career guidance	507
Preparing for a career in the farm equipment industry	597
Inviting high school students to section and regional meetings	660
Career guidance viewpoint at Texas A&M	722
Carney, C. C.	Characteristics of rotary type phase converters
Carreker, J. R.	Drainage properties of some soils in the Atlantic coast flatwoods
Carter, C. E.	Field tests on the Coshocton-type wheel runoff sampler
Carter, Lyle M.	Portable recording penetrometer measures soil strength profiles
Carter, William H.	A power-driven tractor ditcher
	Design and operating characteristics of rotary hoe type devices for soil incorporation
Cary, E. E.	Soil profile modification by backhoe mixing and deep plowing
Casada, James H.	To harvest stalk-cut tobacco
Cassidy, J. J.	Aerodynamic properties of black walnuts: application in separating good from bad walnuts

Cattle during hot weather, Influence of shade height on physiological responses of	T 433
Cattle, Total confinement systems for	210
Centrifugal fertilizer distributors, Design relationships for	T 91
Centrifugal threshing and separation, Theoretical analysis of	T 87
Challenge of water in rural areas, The quantity-quality	WQ 47
Challenge, The education	453
Chancellor, W. J.	Precision planter using vacuum for seed pickup
	Compressive and tensile failure strengths of three agricultural soils
Changes, challenges and opportunities	391
Changes necessary in tractor drive trains with engine power increases	TM 8
Changes necessary to turbocharge a Lavona-type Diesel tractor	TM 38
Channel flow, Effect of rainfall on velocity profile of shallow-	T 330
Channels, Flow-retardance coefficients for selected prismatic	T 327
Chao, Edmund Y. S.	Design relationships for centrifugal fertilizer distributors
Characteristics of flow to diversions and subsurface drains on a sloping Fragon soil	T 586
Characteristics of rotary-type phase converters	T 505
Charity, L. F.	Characteristics of rotary-type phase converters
Chart holder uses old typewriter parts	154
CHECK POINTS	
Mid-Central Region scores at FHA convention-Speaking of manpower-Not quite so tough	54
An awakening? (foreign emphasis on agriculture)-Needed: ae JETS projects	106
The pressure mounts (need for agricultural engineers)	168
FS is now S&E-Thanks, winter meeting speakers-You've got paper work?-National referral center	234
Best wishes, Page-Count us in (new Food Engineering division)	296
New technical coordinator-Russ Hahn	412
-Selection of national meeting papers	462
The maple leaf-Pony express was never like this-Agricultural engineer for president?	518
Agricultural engineers to invade Detroit-C. S. Morrison memorial fund	614
From years to months (for effective committee efforts)	672
New headquarters facility-where we stand today	732
Career guidance activities accelerated-food for thought	
Chemical and nonchemical techniques for suppressing evaporation from small reservoirs, Comparison of	T 172
Chemical feeders and filters	WQ 38
Chemically, Sealing ponds	270
Chen, A. C. Y.	Residence-time distribution in a swept-surface heat exchanger
Cherries, Thermal properties of tart	T 489
Chlorine, bromine and iodine for use in farmstead water treatment, Comparison of	WQ 12
Choda, Andrius	Flow regimes of grains in inclined ducts
Chung, Do Sup	Adsorption and desorption of water vapor by cereal grains and their products-Parts I, II, III
Circuits, Boolean algebra analysis of switching	T 829
Circuits, Mapping relay control	T 831
Circulation-effects on performance of closed-conduit spillways with drop-inlet entrance	T 116
Citrus pulp, Some physical properties of dried	T 483
Clark, C. M.	Development of criteria for selecting fluorescent lights for tobacco grading
Climates, Potential evapotranspiration in humid and arid	EV 23
Closed-conduit spillways with drop-inlet entrance, Circulation effects on performance of	T 116
Closed-die process, Power requirements for forming wafers in a	T 150
Clyde, George D.	Water and man
Coble, C. G.	Oxygen concentration measurements in biological material
Coefficients of kinetic friction of wheat on various metal surfaces	T 411

Coffee, Effects of cumulative damage due to stress cycles on selective harvesting of	T 252
Cold deep-bedded pack vs cold free stalls	86
Colloid movement in a flowing medium with an impressed electric field	T 594
Combination (Penman type) methods	EV 48
Combines, Depreciation and repair costs of self-propelled	T 270
Comparative watershed studies in southern Saskatchewan	T 502
Comparison of chemical and nonchemical techniques for suppressing evaporation from small reservoirs	T 172
Comparison of chlorine, bromine and iodine for use in farmstead water treatment	WQ 12
Comparison of energy balance and mass transport methods for measuring evaporation	EV 45
Comparison of four summer-fallow tillage methods based on seasonal tillage-energy requirement, moisture conservation, and crop yield	T 1
Compilation of computer technology, A useful	32
Composite of cost-saving construction techniques	EH 26
Compressive and tensile failure strengths of three agricultural soils	T 771
Computer, Analyzing field machinery systems by	202
Computer complex, To comprehend Ford's	723
Computer evaluation of moist air properties, Accuracy in	T 579
Computer simulation of an unsprung vehicle	
Part I	T 272
Part II	T 277
Computer technology, A useful compilation of	32
Computer technology, A useful compilation of	T 805
Concepts in hydrologic soil grouping	T 407
Concrete panels for low-cost homes, Precast	EH 32
Conditioning for electrically heated homes, Air	272
Confinement systems for cattle, Total	210
Constant temperature model of the ventilation-dilution phenomenon, A	T 188
Construction materials, Economy	EH 24
Construction, Plywood in modular	EH 38
Construction, Pole framing-inexpensive solution to rural-housing	EH 30
Construction techniques, Composite of cost-saving	EH 26
Construction: time-cost control, Management in	EH 51
Contamination of processed food, To prevent	404
Contribution to regional water table from transmission losses of ephemeral streambeds	T 786
Control structures for automatic surface irrigation systems	T 21
Control system for a selective lettuce harvester	T 69
Controlled-atmosphere storage of potatoes	T 534
Controlled-environment storage of grain, Design methods for	T 366
Converse, J. C.	Effect of low-volume and high-volume aeration on a hog lagoon
	T 475
Conveying of chopped forage, Flow characteristics in pneumatic	T 320
Conveyors-state of the art, Screw	T 615
Cook, Neal A.	Who's afraid of the fuel cell?
Cooling systems, Effects of engine-power increases on cylinder pressures, fuel-injection systems and	TM 20
Cooper, A. W.	Relation between propagation velocity of mechanical waves through soil and soil strength
Corn and grass cover, Tile flow and surface runoff from drainage systems with	T 492
Corn, Growth and effect of molds in stored high-moisture	T 730
Corn kernels by washing, Separation of rodent pellets from	T 223
Corn root penetration, Effect of soil strength on	T 281
Corn to temperature and pressure, Response of germinating	T 539
Corrosion control	WQ 34
Costs and values in housing	EH 21
Cotton: an equipment evaluation, Applying systemic insecticides to	646
Cotton harvest-defoliation scheduling	T 226
Cotton plants, Design and evaluation of equipment for basal application of systemic insecticides to	T 179
Cottonseed rupture from static energy and impact velocity	T 217
Coupler standard, Three-point hitch	80
Couts, H. H.	Drift hazards related to ultra-low-volume and diluted sprays applied by agricultural aircraft
	T 628



Cox, L. M.	Soil profile modification by backhoe mixing and deep plowing	T 775
Cramer, C. O.	For loose-cow housing: cold deep-bedded pack vs. cold free stalls	86
Criddle, Wayne D.	Empirical methods of predicting evapotranspiration using air temperature as the primary variable	EV 54
Crop	yield response to nonuniform application of irrigation water	T 196
Crow, F. R.	Comparison of chemical and nonchemical techniques for suppressing evaporation from small reservoirs	T 172
Culver, R.	An integrating flowmeter	90
Cunningham, C. J.	Three-pen system of broiler management	148
Cunningham, Floyd M.	Design relationships for centrifugal fertilizer distributors	T 91
Cup	anemometer behavior with respect to attack angle variation of the relative wind	T 376
Currence, H. D.	Leaf-strip harvester for alfalfa	20
Curry, R. B.	Colloid movement in a flowing medium with an impressed electric field	T 594
Curtis, J. O.	Stresses in plywood gusset plates for trusses	T 633
Curtis, Willie R.	Chart holder uses old typewriter parts	154
	Simple sediment sampler for flumes	224
	Cylinder pressures, fuel-injection systems and cooling systems, Effects of engine-power increases on	TM 20

## D

Daigle, P. L.	Electric-powered farm equipment	446
Dairy-cattle manure	Some aerobic decomposition properties of	T 546
Dale, A. C.	Some aerobic decomposition properties of dairy-cattle manure	T 546
Dale, Robert F.	Evapotranspiration and weather forecasts for agriculture	EV 10
Damage	due to stress cycles on selective harvesting of coffee, Effects of cumulative	T 252
Daniels, J. M.	Drainage properties of some soils in the Atlantic coast flatwoods	T 337
Data	needs for agricultural systems analysis	T 303
Dates	mechanically, Harvesting	T 486
Damm, D. R.	A stepless variable-speed reducer	648
Davis, Sterling	Subsurface irrigation: how soon a reality?	654
Day, C. L.	Thin-layer hay drying	T 645
Day, D. L.	Some aerobic decomposition properties of dairy-cattle manure	T 546
Deason, D. L.	Tillage energy applications	T 843
Decker, George J.	Effects of engine-power increases on cylinder pressures, fuel-injection systems and cooling systems	TM 20
Decker, Wayne L.	Potential evapotranspiration in humid and arid climates	EV 23
Dedrick, A. R.	Soil particles and aggregates transported in water runoff under various slope conditions using simulated rainfall	T 246
Deep-bedded pack	vs cold free stalls	86
Deflection	tests and trench conditions for plastic drain pipe	T 454
Defoliation	of corn, Thermal	T 24
DeForest, S. S.	Total confinement systems for cattle	210
Depreciation	and repair costs of self-propelled combines	T 270
DeRoock, Bernard	Relation between propagation velocity of mechanical waves through soil and soil strength	T 471
Desert soils	Energy requirements for tillage of	24
Design	and development of new granular applicators	T 182
Design	and evaluation of equipment for basal application of systemic insecticides to cotton plants	T 179
Design	and operating characteristics of rotary hoe type devices for soil incorporation	T 256
Design	and performance of vegetation-lined emergency spillways	T 429

Design	and testing of a thermistor transducer to measure very low air velocity	T 769
Design	concepts, Power projections produce new	346
Design	criteria for mechanical drying of coffee beans	T 40
Design	methods for controlled-environment storage of grain	T 366
Design	of poultry laying-house ventilation and insulation requirements based on calorimetric data and psychrometric relationships	T 512
Design	parameters for drying fluidized alfalfa leaves	T 467
Design	relationships for centrifugal fertilizer distributors	T 91
Desorption	of water vapor by cereal grains and their products, Adsorption and	T 549
Determination	and simulation of field machine vibrations	T 697
Determining	thermal properties of a soil and periodic transfer of solar energy in the earth	T 359
Developing	a paste feeding system for swine	82
Developing	planning procedures for armored-weapons systems	T 296
Development	of criteria for selecting fluorescent lights for tobacco grading	T 515
Development	of liquid-manure-handling equipment	T 161
Development	of modern infiltration theory and application in hydrology	T 379
Developments	in air supported plastic greenhouses	T 652
Devoe, Charles	Factors affecting performance of feed mixers	T 526
Dhanak, A. M.	A method of determining heat transfer through powdered food products	T 543
Dickens, J. W.	Impact damage to peanuts and its effects on germination, seedling development, and milling quality	T 248
Dickerson, J. D.	General design criteria for impact tools to increase cloddiness potential and reduce wind erodibility of sandy loam soils	T 220
Dielectric	properties of peanuts	T 38
Diesel	engine, Effects of overboring a	TM 16
Diesel	engines, Effects of lp-gas injection into agricultural	TM 11
Diesel	tractor, Changes necessary to turbocharge a Lavona-Type	TM 38
Diesel	tractor engine, Effects of overfueling or turbocharging a direct injection	TM 3
Diffusion	of oxygen in grain masses, Isothermal	T 175
Dimensional	standards and performance-test procedures for screw conveyors	T 667
Dinussen, W. E.	Effect of air velocity, air temperature, and mean radiant temperature on performance of growing-finishing swine	T 715
Diseker, Ellis G.	Evaluation of climatic, slope, and site factors on erosion from unprotected roadbanks	T 9
Disk	furrower in Kentucky bluegrass sod, Energy required to operate a	T 333
Disks	Field measurement of forces and moments on wheatland plow	T 762
Ditcher	A power-driven tractor	204
Double-drum	driers, Drying characteristics of pea beans on single and	T 154
Dougan, Riley S.	The quantity-quality challenge of water in rural areas	WQ 47
Dowding, Edwin	Comparison of four summer-fallow tillage methods based on seasonal tillage-energy requirement, moisture conservation, and crop yield	T 1
Downs, R. J.	To record plant growth	720
Drain	and diversion discharge comparisons on a sloping Fragipan soil, Subsurface	T 590
Drain	pipe, Deflection tests and trench conditions for plastic	T 454
Drainage	of unsaturated soils, Numerical studies of	T 388
Drainage	on a slowly permeable soil, Field study of subsurface	T 573
Drainage	on deep ground-water supplies, Effect of pothole	T 643
Drainage	pipe installation techniques and field performance, Polyethylene	T 458
Drainage	problems with organic soil	T 427
Drainage	properties of some soils in the Atlantic coast flatwoods	T 337
Drainage	system performance, An empirical model for predicting	T 723
Drainage	systems with corn and grass cover, Tile flow and surface runoff from	T 492

Drains	on a sloping Fragipan soil, Characteristics of flow to diversions and subsurface	T 586
Driers	Drying characteristics of pea beans on single and double-drum	T 154
Drift	hazards related to ultra-low-volume and diluted sprays applied by agricultural aircraft	T 628
Drying	characteristics of pea beans on single and double-drum driers	T 154
Drying	grain, Temperature gradients in	T 152
Drying	of coffee beans, Design criteria for mechanical	T 40
Dynamic	loading, Behavior of soil under T location in a grain dryer	T 96
Dynamic	response of small piezometers	T 80
Dynamic	shearing resistance of soils	T 439
Dynamometer	tests vs. Nebraska tractor tests, Shop	TM 30

## E

Eagle, George H.	State and county health department cooperation in developing farmstead water-quality improvement	WQ 56
Earth	Determining thermal properties of a soil and periodic transfer of solar energy in the	T 359
Economy	construction materials	EH 24
Economy	housing in community planning	EH 16
Economy	housing seminar, The purpose of the	EH 3
Eddy	flux method, Mass transfer—	EV 42
EDITORIALS		
Marketing	engineering—a new challenge?	19
Frontiers	for agricultural research to meet U.S. and world needs: the outlook	79
The	interrelationship of research and education	141
Agriculture's	national research frontiers	201
Agriculture's	international research frontiers	267
Water	and man	331
Changes	challenges and opportunities	391
Lead	in the introduction of a new order of things	441
Machine—man	interface	495
Product	safety and the agricultural engineer	553
Engineering	technology programs	645
Water—our	engineering responsibility	707
Education	The interrelationship of research and	141
Educational	challenge, The	453
Edwards, C. M.	The purpose of the economy housing seminar	EH 3
Edwards, D. M.	Electrokinetic instrumentation applied to the slow-sand filtration process	T 435
Edwards, J. A.	An integrating flowmeter	90
Effect	of air temperature on performance of growing-finishing swine	T 370
Effect	of air velocity, air temperature, and mean radiant temperature on performance of growing-finishing swine	T 715
Effect	of cooling methods on cooling rates and accompanying desiccation of fruits	T 603
Effect	of depth to water table and plant density on evapotranspiration rate in southern Florida	T 746
Effect	of diameter on performance of powered tractor wheels	T 838
Effect	of dryland leveling on soil moisture storage and grain sorghum yield	T 523
Effect	of low-volume and high-volume aeration on a hog lagoon	T 475
Effect	of pitch, radial clearance hopper exposure and head on performance of screw feeders	T 685
Effect	of pothole drainage on deep ground-water supplies	T 643
Effect	of rainfall on the velocity profile in shallow-channel flow	T 330
Effect	of rapid processing on the properties of freshly slaughtered pork	T 185
Effect	of relative humidity on the electrostatic charging process	T 201
Effect	of soil strength on corn root penetration	T 281
Effects	of cumulative damage due to stress cycles on selective harvesting of coffee	T 252
Effects	of engine-power increases on cylinder pressures, fuel-injection systems and cooling systems	TM 20
Effects	of lp-gas injection into agricultural Diesel engines	TM 11
Effects	of overboring a Diesel engine	TM 16
Effects	of overfueling or turbocharging a direct injection diesel tractor engine	TM 3
Effects	of sustained load and load cycling on yielding of a rigid frame foundation of clayey soil	T 70
Egg	management, Operations research on	T 752
Egg	shells, Stresses in impacted	T 364

Elastic properties of potatoes	T 4
Electric field, Colloid movement in a flowing medium with an impressed	T 594
Electric mills, Small	28
Electric motors, Using large	84
Electric-powered farm equipment	446
Electrical systems for economy housing	EH 49
Electrically heated homes, Air conditioning for	272
Electrokinetic instrumentation applied to the slow-sand filtration process	T 435
Electroretinogram studies with insects, Instrumentation and techniques for	T 130
Electrostatic charging process, Effect of relative humidity on the	T 201
Elms, D. R.	
Neutralization, sequestration, oxidation and adsorption	WQ 24
Empirical method of estimating evapotranspiration using primarily evaporation pans	EV 57
Empirical methods of estimating or predicting evapotranspiration using radiation	EV 49
Empirical methods of predicting evapotranspiration using air temperature as the primary variable	EV 54
Empirical model for predicting drainage system performance, An	T 723
Energy balance method	EV 34
Energy required to operate a disk furrower in Kentucky bluegrass sod	T 333
Energy requirements for tillage of desert soils	24
Engine, Effects of overboring a Diesel	TM 16
Engine, Effects of overfueling or turbocharging a direct injection Diesel tractor	TM 3
Engine maintenance, How factory specifications contribute to good	TM 33
Engine power increases, Changes necessary in tractor drive trains with	TM 8
Engine-power increases on cylinder pressures, fuel-injection systems and cooling systems, Effects of	TM 20
Engineering—a new challenge?, Marketing	19
Engineering in agriculture, Systems	T 289
Engineering planning in agriculture: a summary	36
Engineering technology programs	645
Engines, Effects of lp-gas injection into agricultural Diesel	TM 11
Engines, Experiences with modified	TM 14
England, C. B.	
Concepts in hydrologic soil grouping	T 407
Environmental chamber, Tips on designing an animal	394
Equipment, Electric-powered farm	446
Equipment evaluation, Applying systemic insecticides to cotton: an	646
Equipment for basal application of systemic insecticides to cotton plants, Design and evaluation of	T 179
Equipment, Insurance looks at agricultural	152
Erickson, L. E.	
Modeling feedlot runoff pollution	T 497
Europe and India, Farm-waste management in	710
European experiences with protective cabs and frames	554
Evaluating parameters of plywood pallet containers for fruits and vegetables	T 701
Evaluating shake harvesting of oranges for the fresh fruit market	T 577
Evaluation of climatic, slope, and site factors on erosion from unprotected roadbanks	T 9
Evaluation of polyethylene canopies as plot covers	T 230
Evaporation, Comparison of energy balance and mass transport methods for measuring	EV 45
Evaporation from small reservoirs, Comparison of chemical and nonchemical techniques for suppressing	T 172
Evaporation pans, Empirical methods of estimating evapotranspiration using primarily	EV 57
Evapotranspiration and farm irrigation planning and management	EV 3
Evapotranspiration and irrigation project planning and management	EV 6
Evapotranspiration and water-resource management	EV 12
Evapotranspiration and water yield predictions	EV 8
Evapotranspiration and weather forecasts for agriculture	EV 10
Evapotranspiration by lysimetry, Measuring	EV 28
Evapotranspiration by red kidney beans, Growth chamber studies of	T 611
Evapotranspiration in humid and arid climates, Potential	EV 23
Evapotranspiration rate in southern Florida, Effect of depth to water table and plant density on	T 746
Evapotranspiration using air temperature as the primary variable, Empirical methods of predicting	EV 54

Evapotranspiration using primarily evaporation pans, Empirical methods of estimating	EV 57
Evapotranspiration using radiation, Empirical methods of estimating or predicting	EV 49
Experiences with modified engines	TM 14
Exposure factor curves applied to swine-building ventilation design	T 619

## F

Factors affecting performance of feed mixers	T 526
Factors affecting the design of the finger bar and knife tobacco defoliators	T 264
Farm building insulation-application and problems	T 45
Farm equipment, A Fortran program for selecting	332
Farm-irrigation pipeline design, Method for determining minimum-cost	T 209
Farm irrigation planning and management, Evapotranspiration and	EV 3
Farm machinery selection problem, Activity network techniques applied to a	T 310
Farm pond water-treatment system	WQ 49
Farm products, Instrumentation and measurement techniques for determining physical properties of	T 100
Farm-waste management in Europe and India	710
Farmstead engineering, Scale models in	504
Farmstead systems analysis, Simulators for	T 806
Farrall, A. W.	
A method of determining heat transfer through powdered food products	T 543
Feed mixers, Factors affecting performance of	T 526
Feeders and filters, Chemical	WQ 38
Feeding system for swine, Developing a paste	82
Feedlot runoff pollution, Modeling	T 497
Fenzl, R. N.	
Modern infiltration theory in hydrologic analysis: a symposium-introduction	T 378
Ferguson, J. A.	
Comparison of four-summer-fallow tillage methods based on seasonal tillage-energy requirement, moisture conservation, and crop yield	T 1
Fertilizer metering by full-width machines, Accuracy of	T 63
Fiber optics reflectance attachment, A	448
Field machine vibrations, Determination and simulation of	T 697
Field machinery systems by computer, Analyzing	202
Field measurement of forces and moments on wheatland plow disks	T 762
Field observations of infiltration and soil water redistribution	T 382
Field study of subsurface drainage on a slowly permeable soil	T 573
Field tests on the Coshocton-type wheel runoff sampler	T 133
Film thickness on double-drum drier, Instant sweetpotato flakes—factors affecting	T 157
Films, How to use career guidance	345
Filters, Chemical feeders and	WQ 38
Filtration process, Electrokinetic instrumentation applied to the slow-sand	T 435
Finish, A low-cost exterior wood	219
Finishing materials and methods	EH 40
Finner, M. F.	
Using large electric motors	84
Finney, E. E.	
Elastic properties of potatoes	T 4
Fitzgerald, Lyndell W.	
Marketing engineering—a new challenge? 19	
Flexible membrane canal linings, How to install	500
Flood routing Kinematic	T 340
Florida water-quality improvement program	WQ 48
Flow characteristics in the pneumatic conveying of chopped forage	T 320
Flow properties of fluid milk products	714
Flow regimes of grains in inclined ducts	T 136
Flow-retardance coefficients for selected prismatic channels	T 327
Flowmeter, An integrating	90
Fluidics—its promise and potential	396
Flumes, Simple sediment sampler for	224
Fluorescent lights for tobacco grading, Development of criteria for selecting	T 515
Foil in agriculture, Steel	153
Foliar tissue, A technique for measuring intercellular space vapor pressure in	T 451

## FOOD ENGINEERING

To prevent contamination of processed food	404
The educational challenge	453
Flow properties of fluid milk products	714
Food packaging areas, Turbulent diffusion of a bacterial aerosol in	T 748

Food products, A method of determining heat transfer through powdered	T 543
Food, To prevent contamination of processed	404
Foot, Nelson N.	
Costs and values in housing	EH 21
For loose-cow housing: cold deep-bedded pack vs. cold free stalls	86
Ford's computer complex, To comprehend	723

## FOREST ENGINEERING

Stump to landing harvesting methods for short wood	650
Formwork system for hyperbolic paraboloid shell construction, Performance and use of a mobile	T 600
Forth, Murray W.	
Industry's responsibility in career guidance	507
Fortran program for selecting farm equipment, A	332
Foster, G. H.	
Moisture changes during aeration of grain	T 344
Foster, G. R.	
Field study of subsurface drainage on a slowly permeable soil	T 573
Four-wheel drive and tandem-tractor arrangement, An investigation of	T 284
Fouss, J. L.	
Tile flow and surface runoff from drainage systems with corn and grass cover	T 492
Fox, W. R.	
Tillage energy applications	T 843
Frameless glazing system for wood-frame buildings	EH 60
French, O. C.	
Changes, challenges and opportunities	391
Fritschen, Leo J.	
Energy balance method	EV 34
Frontiers for agricultural research to meet US and world needs: the outlook	79
Fruit market, Evaluating shake harvesting of oranges for the fresh	T 577
Fruits and vegetables, A method of evaluating cushioning materials used in mechanical harvesting and handling of	T 711
Fruits and vegetables, Evaluating parameters of plywood pallet containers for	T 701
Fruits, Effect of cooling methods on cooling rates and accompanying desiccation of	T 603
Fryrear, J. I.	
Performance and use of a mobile formwork system for hyperbolic paraboloid shell construction	T 600
Fuel cell, Who's afraid of the	142
Fuel-injection systems and cooling systems, Effects of engine-power increases on cylinder pressures	TM 20
Fugazzi, John F.	
Plastic plumbing materials	EH 45
Furry, R. B.	
A constant temperature model of the ventilation-dilution phenomenon	T 188
Future of vibratory tillage tools, The	T 78

## G

Gallo, A. S.	
Instant sweetpotato flakes—factors affecting film thickness on double-drum drier	T 157
Galloway, H. M.	
Field study of subsurface drainage on a slowly permeable soil	T 573
Gamma transmission techniques, Soil moisture measurement using	T 205
Gardner, W. R.	
Development of modern infiltration theory and application in hydrology	T 379
Garrett, Roger E.	
Control system for a selective lettuce harvester	T 69
Precision planter using vacuum for seed pickup	T 607
Garrett, W. N.	
Influence of shade height on physiological responses of cattle during hot weather	T 433
General design criteria for impact tools to increase cloddiness potential and reduce wind erodibility of sandy loam soils	T 220
Gentry, J. P.	
Effect of cooling methods on cooling rates and accompanying desiccation of fruits	T 603
George, E. J.	
Cup anemometer behavior with respect to attack angle variation of the relative wind	T 376
Giannini, G. R.	
Precision planter using vacuum for seed pickup	T 607
Glass-fiber mat, Soil-filtering properties of	T 655
Glass, L. Joe	
How rainfall affects shallow channel flow	558

Effect of rainfall on the velocity profile in shallow-channel flow	T 330
Goddard, W. B.	
Mass transfer-eddy flux method	EV 42
Goering, G. E.	
Computer simulation of an unsprung vehicle	
Part I	T 272
Part II	T 277
Goldberg, Dan	
A rainfall simulator with a rotating disk	T 74
Gould, I. A.	
Flow properties of fluid milk products	T 714
Graduate program at MSU, Interdisciplinary	27
Grain, Design methods for controlled-environment storage of	T 366
Grain-drier control based on exhaust temperature sensing	T 110
Grain dryer, Dynamic programming method of air allocation in a	T 96
Grain harvester, Hand-operated	502
Grain, Temperature gradients in drying	T 152
Grains and seeds with an air-comparison pycnometer, Porosity determinations of	T 693
Grains and their products, Adsorption and desorption of water vapor by cereal	T 549
Granular applicators, Design and development of new	T 182
Grass cover, Tile flow and surface runoff from drainage systems with corn and	T 492
Grass filtration, Sediment removal from flood water by	T 35
Grass-silage distributor for filling bunker silos, A	T 836
Gravimetric method for determining relative humidity	T 28
Greene, J. J. Hon.	
Lead in the introduction of a new order of things	441
Greenhouses, Analytical determination of direct visible solar energy transmitted by rigid plastic	T 564
Greenhouses, Developments in air supported plastic	T 652
Grifo, A. P. Jr.	
Reproductive performance of swine in controlled warm environments	T 517
Ground-water resources	WQ 2
Ground-water supplies, Effect of pothole drainage on deep	T 643
Growth and effect of molds in stored high-moisture corn	T 730
Growth chamber studies of evapotranspiration by red kidney beans	T 611
Gunkel, W. W.	
Design and development of new granular applicators	T 182
Gunnarson, H. J.	
Effect of air velocity, air temperature, and mean radiant temperature on performance of growing-finishing swine	T 715
Design and testing of a thermistor transducer to measure very low air velocity	T 769
Gupta, C. P.	
Behavior of soil under dynamic loading: its application to tillage implements	T 352

## H

Hagely, John R.	
Economy construction materials	EH 24
Haines, Steve	
Action programs for local area housing	EH 62
Haise, H. R.	
Hydraulically controlled gates for automatic surface irrigation	T 639
Hall, Carl W.	
Interdisciplinary graduate program at MSU	27
Elastic properties of potatoes	T 4
To prevent contamination of processed food	404
Moisture adsorption characteristics of brown rice	T 448
Design parameters for drying fluidized alfalfa leaves	T 467
Turbulent diffusion of a bacterial aerosol in food packaging areas	T 748
Hall, G. E.	
Coefficients of kinetic friction of wheat on various metal surfaces	T 411
Handy, M. Y.	
Theoretical analysis of centrifugal threshing and separation	T 87
Hammar, P. C.	
Thin-layer hay drying	T 645
Hamon, W. Russell	
Evapotranspiration and water yield predictions	EV 8
Hand-operated grain harvester	502
Hansen, E. L.	
Precast concrete panels for low-cost homes	EH 32

Hansen, Vaughn E.	
Evapotranspiration and water-resource management	EV 12
Hanson, T. L.	
Dynamic shearing resistance of soils	T 439
Harmond, Jesse E.	
A vertical rotating screen separator	275
Harrold, L. L.	
Measuring evapotranspiration by lysimetry	EV 28
Hartman, W. E.	
Changes necessary to turbocharge a Lavona-type Diesel tractor	TM 38
Harung, Walter M.	
Engineering technology programs	645
Harvest stalk-cut tobacco, To	632
Harvester for alfalfa, Leaf-strip	20
Harvesting and handling of fruits and vegetables, A method of evaluating cushioning materials used in mechanical	T 711
Harvesting and handling of white asparagus, Mechanical	T 145
Harvesting dates mechanically	T 486
Harvesting methods for short wood, Stump to landing	650
Harvesting of oranges for the fresh fruit market, Evaluating shake	T 577
Harvesting processing apples mechanically	718
Harvesting standing grain, New threshing technique for	T 199
Haugh, C. G.	
Isothermal diffusion of oxygen in grain masses	T 175
Growth and effect of molds in stored high-moisture corn	T 730
Hay drying, Thin-layer	T 645
Hayes, K. M.	
Mechanical harvesting and handling of processing apples	T 43
Harvesting processing apples mechanically	718
Hays, V. W.	
Effect of air temperature on performance of growing-finishing swine	T 370
Hazen, T. E.	
A constant temperature model of the ventilation-dilution phenomenon	T 188
Effect of air temperature on performance of growing-finishing swine	T 370
Zone cooling for lactating sows	T 444
Heat exchanger, Residence-time distribution in a swept-surface	T 508
Heat transfer from anomalous shapes, Analyses on transient	T 236
Heat transfer from the surface of a bovine, Nonevaporative convective	T 733
Heat transfer through masonry walls	T 123
Heat transfer through powdered food products, A method of determining	T 543
Heating systems for low-income families	EH 41
Hedrick, T. I.	
To prevent contamination of processed food	404
Turbulent diffusion of a bacterial aerosol in food packaging areas	T 748
Heilman, M. D.	
Land leveling	146
Heishman, J. O.	
Three-pen system of broiler management	148
Heitman, Hubert Jr.	
Skin and lung moisture loss from swine	T 691
Heldman, Dennis R.	
To prevent contamination of processed food	404
Turbulent diffusion of a bacterial aerosol in food packaging areas	T 748
Hellickson, M. A.	
Performance of growing turkeys as affected by environmental temperature	T 793
Henderson, J. M.	
Measuring kinetic friction coefficients using oscillatory motion	T 348
Henningson, E. A.	
New direct-drive silo unloader	T 648
Henrickson, R. L.	
Effect of rapid processing on the properties of freshly slaughtered pork	T 185
Analyses on transient heat transfer from anomalous shapes	T 236
Henry, J. E.	
Effect of soil strength on corn root penetration	T 281
Response of germinating corn to temperature and pressure	T 539
Henson, Wiley H.	
Analytical description of moisture sorption of cured tobacco	T 31
Hermesmeier, L. F.	
A method of computing soil movement throughout a field	T 742
Herringbone layout can help the dairy farmer, How the	482
Herum, F. L.	
Dimensional standards and performance-test procedures for screw conveyors	T 667
Heston, Russell E.	
Insurance looks at agricultural equipment	152

Hetzler, R. E.	
Cup anemometer behavior with respect to attack angle variation of the relative wind	T 376
Hewitt, William A.	
Frontiers for agricultural research to meet US and world needs: the outlook	79
Hiler, E. A.	
Colloid movement in a flowing medium with an impressed electric field	T 594
Hinkle, C. N.	
Experiences with modified engines	TM 14
Hitch for pull-type implements, A weight-transfer	T 847
Hobgood, Price	
Design methods for controlled-environment storage of grain	T 366
The career guidance viewpoint at Texas A&M	722
Hodgell, Murlin	
Economy housing in community planning	EH 16
Hoffman, J. E. Jr.	
New direct-drive silo unloader	T 648
Hog lagoon, Effect of low-volume and high-volume aeration on a	T 475
Holekamp, E. R.	
A grass-silage distributor for filling bunker silos	T 836
Holland, A. H.	
Developments in air supported plastic greenhouses	T 652
Hollingsworth, J. P.	
Instrumentation and techniques for electroretinogram studies with insects	T 130
Holtan, H. N.	
Concepts in hydrologic soil grouping	T 407
Holzhei, D. E.	
Design and development of new granular applicators	T 182
Homes, Precast concrete panels for low-cost	EH 32
Horn, D. L.	
Method for determining minimum-cost farm-irrigation pipeline design	T 209
Horner, G. M.	
Soil profile modification by backhoe mixing and deep plowing	T 775
Hosler, T. W.	
Effects of overboring a Diesel engine	TM 16
Houses, Mobile and factory-built	EH 37
Housing, Action programs for local area	EH 62
Housing construction, Pole framing-inexpensive solution to rural-	EH 30
Housing, Costs and values in	EH 21
Housing costs, Influence of land values on	EH 10
Housing design standard, Low-cost	EH 17
Housing, Electrical systems for economy	EH 49
Housing, Human needs in	EH 5
Housing in community planning, Economy	EH 16
Housing seminar, The purpose of the economy	EH 3
Housing, Wood foundations for economy	EH 57
How factory specifications contribute to good engine maintenance	TM 33
How rainfall affects shallow channel flow	558
How solid lubricants protect heavy machinery	268
How to install flexible membrane canal linings	500
How to use career guidance films	345
Huang, B. K.	
Vibration studies of tractor operators	T 478
Huber, S. G.	
Depreciation and repair costs of self-propelled combines	T 270
Huff, E. R.	
Tensile properties of Kennebec potatoes	T 414
Huggins, L. F.	
The applicability of simulation techniques to the design of hydrologic structures	T 460
Field study of subsurface drainage on a slowly permeable soil	T 573
Human needs in housing	EH 5
Hummel, J. W.	
Measuring cutting forces of Maryland tobacco in relation to mechanical harvester design	T 112
Humphreys, A. S.	
Control structures for automatic surface irrigation systems	T 21
Automating surface irrigation	338
Humphreys, Harold W.	
Circulation-effects on performance of closed-conduit spillways with drop-inlet entrance	T 116
Humphries, Ervin G.	
A technique for measuring intercellular space vapor pressure in foliar tissue	T 451
Hunt, Donnell	
A Fortran program for selecting farm equipment	332
Hurst, H. T.	
Relation between deflection and strain of freely vibrating wood beams	T 796
Husman, D. W.	
Changes necessary to turbocharge a Lavona-type Diesel tractor	TM 38



Huxsoll, C. C.	
Growth and effect of molds in stored high-moisture corn	T 730
Hydraulic conductivity by the four-well method, Measuring	T 672
Hydraulic description of recession of shallow flow over a porous bed	T 54
Hydraulically controlled gates for automatic surface irrigation	T 639
Hydrogen sulfide, Iron, manganese and WQ 44	
Hydrologic analysis, Modern infiltration theory in	T 378
Hydrologic soil grouping, Concepts of	T 407
Hydrologic structures, The applicability of simulation techniques to the design of	T 460
Hydrology, Stochastic models in	T 813
Hyperbolic paraboloid shell construction, Performance and use of a mobile formwork system for	T 600
Hysteresis between sorption and desorption isotherms in biological materials, Theory of	T 260

## I

Impact damage to peanuts and its effects on germination, seedling development, and milling quality	T 248
Impact tools, General design criteria for Implements, A weight-transfer hitch for pull-type	T 847
Improving emergence of pelleted vegetable seed	T 658
Inclined ducts, Flow regimes of grains in	T 136
Increment of cut-and-rake angle interaction during granular incorporation by rotary tillage	T 718
India, Farm-waste management in Europe and	710
Industry cooperation in developing state farmstead water-quality improvement programs	WQ 55
Industry research of equipment components	EH 55
Industry's responsibility in career guidance	507
Infiltration and soil-water redistribution, Field observation of	T 382
Infiltration in nonlinear watershed analysis processes, Role of	T 396
Infiltration theory and application in hydrology, Development of modern	T 379
Influence of land values on housing costs	EH 10
Influence of shade height on physiological responses of cattle during hot weather	T 433
Insecticides to cotton: an equipment evaluation, Applying systemic	646
Insecticides to cotton plants, Design and evaluation of equipment for basal application of systemic	T 179
Instant sweetpotato flakes—factors affecting film thickness on double-drum drier	T 157

## INSTRUMENT NEWS

An integrating flowmeter	90
Chart holder uses old typewriter parts	154
Simple sediment sampler for flumes	224
A recording soil surface profile meter	280
Portable recording penetrometer measures soil strength profiles	348
A fiber optics reflectance attachment	448
To record plant growth	720
Instrumentation and measurement techniques for determining physical properties of farm products	T 100
Instrumentation and techniques for electrotinogram studies with insects	T 130
Instrumentation applied to the slow-sand filtration process, Electrokinetic	T 435
Instrumentation, Soil bin	442
Insulation (application and problems), Farm building	T 45
Insulation requirements based on calorimetric data and psychrometric relationships, Design of poultry laying-house ventilation and	T 512
Insurance looks at agricultural equipment	152
Integrating flowmeter, An	90
Interdisciplinary graduate program at MSU	27
International research frontiers, Agriculture's	267
Interrelationship of research and education, The	141
Investigation of four-wheel-drive and tandem-tractor arrangement, An	T 284
Ion separation	WQ 21
Iron, manganese and hydrogen sulfide	WQ 44
Irrigation, Automating surface	338
Irrigation: how soon a reality?, Subsurface	654
Irrigation, Hydraulically controlled gates for automatic surface	T 639
Irrigation planning and management, Evapotranspiration and farm	EV 3
Irrigation project planning and management, Evapotranspiration and	EV 6
Irrigation systems, Control structures for automatic surface	T 21
Irrigation water, Crop yield response to nonuniform application of	T 196

Irrigation with high salt-content water, Sprinkler	T 494
Irving, George W. Jr.	
Agriculture's national research frontiers	201
Irwin, R. W.	
Drainage problems with organic soil	T 427
Isaacs, G. W.	
Grain-drier control based on exhaust temperature sensing	T 110
Isothermal diffusion of oxygen in grain masses	T 175
Porosity determinations of grains and seeds with an air-comparison pycnometer	T 693
Growth and effect of molds in stored high-moisture corn	T 730
ISO tractor and implement committees hold first meeting in U. S.	600
Isothermal diffusion of oxygen in grain masses	T 175
Isotherms of wheat, Research of hysteresis between sorption and desorption	T 756
Isotope tracers, Basic principles and application techniques of	T 705

## J

Jackson, Gary L.	
How factory specifications contribute to good engine maintenance	TM 33
Jacobs, Martin B.	
Steel foil in agriculture	153
Jedele, D. C.	
Exposure factor curves applied to swine-building ventilation design	T 619
Jensen, Marvin E.	
Empirical methods of estimating or predicting evapotranspiration using radiation	EV 49
Jensen, Max C.	
Growth chamber studies of evapotranspiration by red kidney beans	T 611
Johannes, R. F.	
For loose-cow housing: cold deep-bedded pack vs. cold free stalls	86
Johansson, S.	
A weight-transfer hitch for pull-type implements	T 847
Johnson, H. P.	
Dynamic shearing resistance of soils	T 439
Johnson, W. H.	
Theoretical analysis of centrifugal threshing and separation	T 87
Response of germinating corn to temperature and pressure	T 539
Johnson, William	
Product safety and the agricultural engineer	553
Jones, C. D.	
Flow properties of fluid milk products	714
Jones, Rudard A.	
Composite of cost-saving construction techniques	EH 26
Jordan, K. A.	
Accuracy in computer evaluation of moist air properties	T 579
Mapping relay control circuits	T 831
Jorgensen, N. A.	
For loose-cow housing: cold deep-bedded pack vs. cold free stalls	86

## K

Kabler, P. W.	
Biological and radiological properties of water	WQ 9
Kahana, Y.	
Use of storm runoff for artificial recharge	T 678
Kaufman, L. C.	
Increment of cut-and-rake angle interaction during granular incorporation by rotary tillage	T 718
Kelly, C. F.	
Measuring incoming 'short' and 'long' wavelength radiation with directional thermopile radiometers	T 462
Solar, atmospheric, and terrestrial radiation received by shaded and unshaded animals	T 622
Kent, J. D.	
Thermal defoliation of cotton	T 24
Keppner, R. A.	
Mechanical harvesting and handling of white asparagus	T 145
Kiker, C. F.	
Some physical properties of dried citrus pulp	T 483
Kinch, D. M.	
Design criteria for mechanical drying of coffee beans	T 40
Kinematic flood routing	T 340
Kinetic friction coefficients using oscillatory motion, Measuring	T 348
Kinetic friction of wheat on various metal surfaces, Coefficients of	T 411
King, K. M.	
Mass transfer—profile methods	EV 38
Kirk, I. W.	
Cottonseed rupture from static energy and impact velocity	T 217

Kirkpatrick, D. G.	
Timing an event dependent on ground speed	T 66
Kitani, Osamu	
Stress-strain relationships for soil with variable lateral strain	T 738
Kleis, R. W.	
Mechanical harvesting and handling of processing apples	T 43
Harvesting processing apples mechanically	718
Klueter, H. H.	
To record plant growth	720
Klumb, George H.	
Nature of water: physical and chemical properties	WQ 5
Ion separation	WQ 21
Klute, A.	
Rainfall infiltration into a vertical soil column	T 391
Kreissl, J. F.	
Biological and radiological properties of water	WQ 9
Krizek, D. T.	
To record plant growth	720
Kunze, O. R.	
Moisture adsorption characteristics of brown rice	T 448

## L

Lagoon, Effect of low-volume and high-volume aeration on a hog	T 475
Lagooning of liquid manure (bovine): bacteriological aspects	T 784
Land leveling	146
Land values on housing costs, Influence of	EH 10
Lane, D. E.	
Shop dynamometer tests vs. Nebraska tractor tests	TM 30
Langley, Maurice N.	
Evapotranspiration and irrigation project planning and management	EV 6
Large electric motors, Using	84
Larsen, H. J.	
For loose-cow housing: cold deep-bedded pack vs. cold free stalls	86
Larsen, L. F.	
Shop dynamometer tests vs. Nebraska tractor tests	TM 30
Larson, C. L.	
A method of computing soil movement throughout a field	T 742
Larson, G. H.	
Effects of lp-gas injection into agricultural Diesel engines	TM 11
Larson, L. W.	
The future of vibratory tillage tools	T 78
Larson, Russell E.	
Scale models in farmstead engineering	504
Lavona-type Diesel tractor, Changes necessary to turbocharge a	TM 38
Lead in the introduction of a new order of things	441
Leaf-strip harvester for alfalfa	20
Leavitt, Adelbert	
Effects of lp-gas injection into agricultural Diesel engines	TM 11
Lembke, Walter D.	
Observed and predicted tile flow on a lake plain soil	T 142
Lemmon, N. F.	
The ASAE quick-attaching three-point hitch coupler standard	80
Lemon, E. R.	
Plant factors and transpiration: the plant community	EV 17
Leonard, R. K.	
Preparing for a career in the farm equipment industry	597
LePori, W. A.	
Energy requirements for tillage of desert soils	24
Cotton harvest-defoliation scheduling	T 226
Lettuce harvester, Control system for a selective	T 69
Leveling, Land	146
Leveling on soil moisture storage and grain sorghum yield, Effect of dryland	T 523
Lewallen, M. J.	
Oxygen-permeability of concrete silo wall sections	T 114
Lindquist, D. A.	
Design and evaluation of equipment for basal application of systemic insecticides to cotton plants	T 179
Applying systemic insecticides to cotton: an equipment evaluation	646
Link, D. A.	
Activity network techniques applied to a farm machinery selection problem	T 310
Network analysis and mathematical programming	T 820
Lipper, Ralph I.	
Air conditioning for electrically heated homes	272
Modeling feedlot runoff pollution	T 497
Liquid flows, Low-pressure-differential measurement in	T 84



Liquid-manure-handling equipment, Development of	T 161
Livestock production facilities, Queuing techniques in designing and operating	T 519
Long, F.	
Drainage properties of some soils in the Atlantic coast flatwoods	T 337
Long, Melvin E.	
Fluidics—its promise and potential	396
Longhouse, Alfred D.	
Three-pen system of broiler management	148
Design of poultry laying-house ventilation and insulation requirements based on calorimetric data and psychrometric relationships	T 512
Accuracy in computer evaluation of moist air properties	T 579
Loose-cow housing	86
Lord, W. J.	
Mechanical harvesting and handling of processing apples	T 43
Harvesting processing apples mechanically	718
Lorenzen, Robert T.	
Queuing techniques in designing and operating livestock production facilities	T 519
Lovely, Walter G.	
A recording soil surface profile meter	280
Low-cost exterior wood finish, A	219
Low-cost housing design standard	EH 17
Low-pressure-differential measurements in liquid flows	T 84
LP-gas injection into agricultural Diesel engines, Effects of	TM 11
Lubricants protect heavy machinery, How solid	268
Lyles, Leon	
Land leveling	146
General design criteria for impact tools to increase cloddiness potential and reduce wind erodibility of sandy loam soils	T 220
Effect of dryland leveling on soil moisture storage and grain sorghum yield	T 523

## M

Machine-man interface	495
Machinery selection problem, Activity network techniques applied to a farm	T 310
Mahoney, G. W. A.	
Performance and use of a mobile form-work system for hyperbolic paraboloid shell construction	T 600
Mailing program for high schools, Organizing a	393
Management in construction: time-cost control	EH 51
Manbeck, H. B.	
Analytical determination of direct visible solar energy transmitted by rigid plastic greenhouses	T 564
A method of evaluating cushioning materials used in mechanical harvesting and handling of fruits and vegetables	T 711
Manganese and hydrogen sulfide, Iron WQ 44	
Manges, H. L.	
Comparison of chemical and nonchemical techniques for suppressing evaporation from small reservoirs	T 172
Mangold, D. W.	
Effect of air temperature on performance of growing-finishing swine	T 370
Manson, P. W.	
Effect of pothole drainage on deep ground-water supplies	T 643
Manure (bovine): bacteriological aspects, Lagooning of liquid	T 784
Manure-handling equipment, Development of liquid-	T 161
Manure, Some aerobic decomposition properties of dairy-cattle	T 546
Mapping relay control circuits	T 831
Marketing engineering—a new challenge?	19
Marks, Walter A.	
How solid lubricants protect heavy machinery	268
Marshall, McNeil	
Studies of slotted-floor swine housing in controlled, semicontrolled and uncontrolled environments	T 561
Marston, Richard H.	
A method for hydraulic design of tide gates	T 139
Mass transfer—eddy flux method	EV 42
Mass transfer—profile methods	EV 38
Mathematical model of the psychrometric chart	T 558
Mathematical programming, Network analysis and	T 820
McAlister, R. H.	
Pole framing—inexpensive solution to rural-housing construction	EH 30
McColly, H. F.	
New threshing technique for harvesting standing grain	T 199

McCoy, E.	
Lagooning of liquid manure (bovine): bacteriological aspects	T 784
McCrackin, D. R.	
Performance and use of a mobile form-work system for hyperbolic paraboloid shell construction	T 600
McCune, W. E.	
Design methods for controlled-environment storage of grain	T 366
McFate, K. L.	
Small electric mills: costs — characteristics	28
McGinnis, John T.	
Evaluation of climatic, slope, and site factors on erosion from unprotected roadbanks	T 9
McGuinness, J. L.	
Plot and small watershed runoff: its relation to larger areas	T 464
McKenzie, B. A.	
Dimensional standards and performance-test procedures for screw conveyors	T 667
McKibben, J. S.	
Effect of soil strength on corn root penetration	T 281
McLeod, H. E.	
Cottonseed rupture from static energy and impact velocity	T 217
McTaggart, J. W.	
Performance and use of a mobile form-work system for hyperbolic paraboloid shell construction	T 600
Mears, D. R.	
Timing an event dependent on ground speed	T 66
Measuring cutting forces of Maryland tobacco in relation to mechanical harvesting design	T 12
Measuring evapotranspiration by lysimetry	EV 28
Measuring hydraulic conductivity by the four-well method	T 672
Measuring incoming 'short' and 'long' wavelength radiation with directional thermopile radiometers	T 462
Measuring kinetic friction coefficients using oscillatory motion	T 348
Mech, S. J.	
Soil profile modification by backhoe mixing and deep plowing	T 775
Mechanical harvester design, Measuring cutting forces of Maryland tobacco in relation to	T 12
Mechanical harvesting and handling of fruits and vegetables, A method of evaluating cushioning materials used in	T 711
Mechanical harvesting and handling of processing apples	T 43
Mechanical harvesting and handling of white asparagus	T 145
Mechanically, Harvesting processing apples	718
Membrane canal linings, How to install flexible	500
Mensch, Robert L.	
Tips on designing an animal environmental chamber	394
Merkel, J. A.	
Zone cooling for lactating sows	T 444
Method for determining minimum-cost farm-irrigation pipeline design	T 209
Method for hydraulic design of tide gates, A	T 139
Method of computing soil movement throughout a field, A	T 742
Method of determining heat transfer through powdered food products, A	T 543
Method of evaluating cushioning materials used in mechanical harvesting and handling of fruits and vegetables, A	T 711
Milk products, Flow properties of fluid	714
Miller, Austin, J.	
Automatic sprinkler systems for turf	344
Miller, R. J.	
Field observations of infiltration and soil-water redistribution	T 382
Millier, W. F.	
Improving emergence of pelleted vegetable seed	T 658
Determination and simulation of field machine vibrations	T 697
Mills, Small electric	28
Mills, W. C.	
Effect of depth to water table and plant density on evapotranspiration rate in southern Florida	T 746
Miner, J. R.	
Modeling feedlot runoff pollution	T 497
Minor, R. C.	
Relation between deflection and strain of freely vibrating wood beams	T 796
Mobile and factory-built houses	EH 37
Modeling feedlot runoff pollution	T 497
Models in farmstead engineering, Scale	504
Modern infiltration theory in hydrologic analysis: a symposium	T 378
Mohsenin, N. N.	
Apparatus for determination of bulk modulus and compressibility of materials	T 670

A method of evaluating cushioning materials used in mechanical harvesting and handling of fruits and vegetables	T 711
Moisture adsorption characteristics of brown rice	T 448
Moisture changes during aeration of grain	T 344
Moisture-content equation, A new equilibrium	T 675
Moisture sorption of cured tobacco, Analytical description of	T 31
Monke, E. J.	
Electrokinetic instrumentation applied to the slow-sand filtration process	T 439
The applicability of simulation techniques to the design of hydrologic structures	T 460
Field study of subsurface drainage on a slowly permeable soil	T 573
Montgomery, James E.	
Human needs in housing	EH 5
Moore, M. J.	
Timing an event dependent on ground speed	T 66
Moore, Wendell R.	
Plywood in modular construction	EH 38
Mordue, D. L.	
Instrumentation and techniques for electroretinogram studies with insects	T 130
Morgan, Edward	
Factors affecting performance of feed mixers	T 526
Morin, Joseph	
A rainfall simulator with a rotating disk	T 74
Morrison, C. S.	
Engineering planning in agriculture: a summary	36
Morrison, Stanton R.	
Ping-pong ball into black-globe thermometer	341
Measuring incoming 'short' and 'long' wavelength radiation with directional thermopile radiometers	T 462
Solar, atmospheric, and terrestrial radiation received by shaded and unshaded animals	T 622
Skin and lung moisture loss from swine	T 691
Morton, C. T.	
Ridge-planted and plow-planted sugar beets	T 128
Moseman, A. H.	
Agriculture's international research frontiers	267
Moustafa, S. M. A.	
Theoretical modeling of the wheat plant	T 799
Muehling, Arthur J.	
Farm building insulation—application and problems	T 45
Mueller, R. A.	
Aerodynamic properties of black walnuts: application in separating good from bad walnuts	T 57
Mulches for improving seedling emergence, Applying	T 626
Myers, Herbert A.	
Soil bin instrumentation	442
Myers, V. I.	
Deflection tests and trench conditions for plastic drain pipe	T 454
Polyethylene drainage pipe installation techniques and field performance	T 458

## N

Nace, Raymond L.	
Groundwater resources	WQ 3
Nature of water: physical and chemical properties	WQ 5
Nebraska tractor tests, Shop Dynamometer tests vs.	TM 30
NECROLOGIES	
Irvin F. Reed	46
Robert A. Waddail, Sr.	46
Clarence L. Hedman	109
Alfred F. Schultz	109
Albert Walter Lavers	164
Frederick A. Brooks	232
George W. Iverson	232
Joseph P. Schaezner	356
Lloyd N. Brown	356
Charles S. Morrison	375
Harold W. Hein	411
William Kalbfleisch	464
Richard A. Bair	464
Arnold E. W. Johnson	603
Sterling A. Taylor	603
Willi Kloth	730
Nelson, D. C.	
Controlled-atmosphere storage of potatoes	T 534
Nelson, G. L.	
Effects of sustained load and load cycling on yielding of a rigid frame foundation of clayey soil	T 70
Analyses on transient heat transfer from anomalous shapes	T 236
Theory of hysteresis between sorption and desorption isotherms in biological materials	T 260

Nonevaporative convective heat transfer from the surface of a bovine	T 733
Research of hysteresis between sorption and desorption isotherms of wheat	T 756
<b>Nelson, Leon F.</b>	
Gravimetric method for determining relative humidity	T 28
Network analysis and mathematical programming	T 820
Neutralization, sequestration, oxidation and adsorption	WQ 24
New direct-drive silo unloader	T 648
New equilibrium moisture-content equation, A	T 675
New threshing technique for harvesting standing grain	T 199
<b>Newman, Jerry O.</b>	
Heating systems for low-income families	EH 41
<b>Nicholaichuk, W.</b>	
Comparative watershed studies in southern Saskatchewan	T 502
<b>Nielsen, D. R.</b>	
Field observations of infiltration and soil-water redistribution	T 382
<b>Noffsinger, Terrell L.</b>	
Solar radiation—adequacy of present USA and world networks	EV 62
Nonevaporative convective heat transfer from the surface of a bovine	T 733
<b>Norton, John S.</b>	
A telephone frost-warning device	560
Numerical studies of drainage of unsaturated soils	T 388

## O

<b>O'Brien, Michael</b>	
Sensors and controls for automatic fillers for fruit and vegetable bins	T 18
Mechanical harvesting and handling of white asparagus	T 145
Effect of cooling methods on cooling rates and accompanying desiccation of fruits	T 603
Evaluating parameters of plywood pallet containers for fruits and vegetables	T 701
Observed and predicted tile flow on a lake plain soil	T 142
<b>Ojha, T. P.</b>	
Hand-operated grain harvester	502
A method of determining heat transfer through powdered food products	T 543
<b>Oliver, R. P.</b>	
Comparison of chlorine, bromine and iodine for use in farmstead water treatment	WQ 12
<b>Oliver, Elwood F.</b>	
A recruitment program	286
Temperature gradients in drying grain	T 152
<b>Oman, G. E.</b>	
Design and performance of vegetation-lined emergency spillways	T 429
<b>O'Neill, Paul F.</b>	
Industry research of equipment components	EH 55
<b>Onstad, C. A.</b>	
A method of computing soil movement throughout a field	T 742
Operational system problems, Use of simulation methodology for solution of	T 291
Operations research on egg management	T 752
Optics reflectance attachment, A fiber	448
Optimum tractor weight for maximum drawbar horsepower	T 790
Oranges for the fresh fruit market, Evaluating shake harvesting of	T 577
Order of things, Lead in the introduction of a new	441
Organizing a mailing program to high schools	393
<b>Overton, D. E.</b>	
Flow-retardance coefficients for selected prismatic channels	T 327
Oxidation and adsorption, Neutralization, sequestration,	WQ 24
Oxygen concentration measurements in biological material	T 325
Oxygen in grain masses, Isothermal diffusion of	T 175
Oxygen-permeability of concrete silo wall sections	T 114

## P

Packaging areas, Turbulent diffusion of a bacterial aerosol in food	T 748
<b>Pahoja, Murlidhar</b>	
Effects of overfueling or turbocharging a direct injection diesel tractor engine	TM 3
<b>Palmberg, E. A.</b>	
Air conditioning for electrically heated homes	272
<b>Palmer, Melville L.</b>	
Water-quality improvement programs in Ohio	WQ 51

<b>Pandya, A. C.</b>	
Behavior of soil under dynamic loading: its application to tillage implements	T 352
Parameters for drying fluidized alfalfa leaves, Design	T 467
Parameters for tractor-wheel performance	T 420
Part I—Definitions	T 420
Part II—Description and use	T 424
<b>Parham, John W.</b>	
Serving large single-phase motors on rural lines	508
<b>Park, Joseph K.</b>	
A vertical rotating screen separator	275
<b>Parker, B. F.</b>	
Back sphere thermal radiometry	T 780
<b>Parker, R. E.</b>	
Thermal properties of tart cherries	T 489
<b>Parsons, D. A.</b>	
Field tests on the Coshocton-type wheel runoff sampler	T 133
<b>Parsons, J. L.</b>	
Effect of low-volume and high-volume aeration on a hog lagoon	T 475
Paste-feeding system for swine	82
<b>Patterson, R. J.</b>	
Drying characteristics of pea beans on single and double-drum driers	T 154
<b>Pattie, D. R.</b>	
Permeability—practical solution to ventilation problems?	34
Pea beans on single and double-drum driers, Drying characteristics of	T 154
Peanuts and its effect on germination, seedling development, and milling quality, Impact damage to	T 248
Peanuts, Dielectric properties of	T 38
<b>Pearl, R. M.</b>	
Dynamic programming method of air allocation in a grain dryer	T 96
Dimensional standards and performance-test procedures for screw conveyors	T 667
Penetrometer measures soil strength profiles, Portable recording	348
(Penman-type) methods, Combination	EV 48
<b>Penrod, E. B.</b>	
Determining thermal properties of a soil and periodic transfer of solar energy in the earth	T 359
<b>Pereira, N.</b>	
Ping-pong ball into black-globe thermometer	341
Influence of shade height on physiological responses of cattle during hot weather	T 433
Solar, atmospheric, and terrestrial radiation received by shaded and unshaded animals	T 622
Performance and use of a mobile formwork system for hyperbolic paraboloid shell construction	T 600
Performance of growing turkeys as affected by environmental temperature	T 793
<b>Perkins, R. M.</b>	
Harvesting dates mechanically	T 486
Developments in air supported plastic greenhouses	T 652
Permeability, Methods of calculating unsaturated	T 400
Permeability—practical solution to ventilation problems?	34
<b>Person, N. K. Jr.</b>	
Design methods for controlled-environment storage of grain	T 366
<b>Persson, Sverker P. E.</b>	
European experiences with protective cabs and frames	554
Parameters for tractor-wheel performance	T 420
Part I—Definitions	T 420
Part II—Description and use	T 424
Stress-strain relationships for soil with variable lateral strain	T 738
A weight-transfer hitch for pull-type implements	T 847
<b>Pettis, A. M.</b>	
Florida water-quality improvement program	WQ 48
<b>Pfost, H. B.</b>	
Separation of roasting pellets from corn kernels by washing	T 233
Factors affecting performance of feed mixers	T 526
Adsorption and desorption of water vapor by cereal grains and their products—Parts I, II, III	T 549
Phase converters, Characteristics of rotary-type	T 505
Physiological responses of cattle during hot weather, Influence of shade height on	T 433
Physiomechanics of broiler chickens	T 170
Piezometers, Dynamic response of small	T 80
Ping-pong ball into black-globe thermometer	341
Pipeline design, Method for determining minimum-cost farm-irrigation	T 209
Planning in agriculture, Engineering	36
Planning procedures for armored-weapons systems, Developing	T 296
Plant density on evapotranspiration rate in southern Florida, Effect of depth	

to water table and	T 746
Plant factors and transpiration—the individual leaf or plant	EV 14
Plant factors and transpiration: the plant community	EV 17
Plant growth, To record	720
Planter using vacuum for seed pickup, Precision	T 607
Plastic drain pipe, deflection tests and trench conditions for	T 454
Plastic greenhouses, Analytical determination of direct visible solar energy transmitted by rigid	T 564
Plastic greenhouses, Developments in air supported	T 652
Plastic plumbing materials	EH 45
Plot and small watershed runoff: its relation to larger areas	T 464
Plot covers, Evaluation of polyethylene canopies as	T 230
Plow disks, Field measurement of forces and moments on wheatland	T 762
Plowing, Soil profile modification by backhoe mixing and deep	T 775
Plumbing materials, Plastic	EH 45
Plywood gusset plates for trusses, Stresses in	T 633
Plywood in modular construction	EH 38
Plywood pallet containers for fruits and vegetables, Evaluating parameters of	T 701
Pneumatic conveying of chopped forage, Flow characteristics in the	T 320
Pole framing—inexpensive solution to rural-housing construction	EH 30
Pollution, Modeling feedlot runoff	T 497
Polyethylene drainage pipe installation techniques and field performance	T 458
<b>Pomroy, Jesse H.</b>	
Scale models in farmstead engineering	504
Ponds chemically, Sealing	270
Pork, Effect of rapid processing on the properties of freshly slaughtered	T 185
Porosity determinations of grains and seeds with an air-comparison pycnometer	T 693
Portable recording penetrometer measures soil strength profiles	348
<b>Porterfield, J. G.</b>	
Thermal defoliation of cotton	T 24
Dielectric properties of peanuts	T 38
Size classifying of granular particles in a vibratory screening system	T 568
Applying mulches for improving seedling emergence	T 626
Potatoes, Controlled-atmosphere storage	T 534
Potatoes, Elastic properties of	T 4
Potential evapotranspiration in humid and arid climates	EV 23
Poultry laying-house ventilation and insulation requirements based on calorimetric data and psychrometric relationships, Design of	T 512
Power-driven tractor ditcher, A	204
Power projections produce new design concepts	346
Power requirements for forming wafers in a closed-die process	T 150
<b>Poyner, Russell R.</b>	
Predicting tillage trends	145
<b>Pratt, G. L.</b>	
Effect of low-volume and high-volume aeration on a hog lagoon	T 475
Precast concrete panels for low-cost homes	EH 32
Precision planter using vacuum for seed pickup	T 607
Predicting tillage trends	145
Preparing for a career in the farm equipment industry	597
Prismatic channels, Flow-retardance coefficients for selected	T 327
Processed food, To prevent contamination of	404
Processing apples mechanically, Harvesting	718
Processing on the properties of freshly slaughtered pork, Effect of rapid	T 185
Product safety and the agricultural engineer	553
Profile meter, A recording soil surface	280
Program planning and development, Techniques of	WQ 53
Projections produce new design concepts, Power	346
Protective canopy for the farm tractor, A	496
<b>Pruitt, W. O.</b>	
Mass transfer—eddy flux method	EV 42
Empirical method of estimating evapotranspiration using primarily evaporation pans	EV 57
Psychrometric chart, Mathematical model of the	T 558
<b>Puckett, H. B.</b>	
A stepless variable-speed reducer	648
Pulpwood harvesting, Technical and economic restraints in	206
Purpose of the economy housing seminar, The	EH 3
Pycnometer, Porosity determinations of grains and seeds with an air-comparison	T 693

# Q

- Quackenbush, Tyler H.**  
How to install flexible membrane canal linings ..... 500
- Quaile, George E.**  
Technical and economic restraints in pulpwood harvesting ..... 206
- Quantity-quality challenge of water in rural areas, The ..... WQ 47
- Queuing techniques in designing and operating livestock production facilities T 519

# R

- Radcliffe, B. M.**  
Management in construction: time-cost control ..... EH 51
- Radiation, Empirical methods of estimating or predicting evapotranspiration using ..... EV 49
- Radiation received by shaded and unshaded animals, Solar, atmospheric, and terrestrial ..... T 622
- Radiation, Temperature and enthalpy equivalence of thermal ..... T 727
- Radiation with directional thermopile radiometers, Measuring incoming 'short' and 'long' wavelength ..... T 462
- Radiological properties of water, Biological and ..... WQ 9
- Radiometers, Measuring incoming 'short' and 'long' wavelength radiation with directional thermopile ..... T 462
- Radiometry, Back sphere thermal ..... T 780
- Raindrop splash, An analysis of soil transportation by ..... T 166
- Rainfall infiltration into a vertical soil column ..... T 391
- Rainfall on velocity profile in shallow-channel flow, Effect of ..... T 330
- Rainfall simulator with a rotating disk, A T 74
- Rebhun, M.**  
Use of storm runoff for artificial recharge ..... T 678
- Recession of shallow flow over a porous bed, Hydraulic description of ..... T 54
- Recording soil surface profile meter, A ..... 280
- Recruitment program, A ..... 286
- Reducer, A stepless variable-speed ..... 648
- Reece, F. N.**  
Power requirements for forming wafers in a closed-die process ..... T 150
- Reed, I. F.**  
Effect of diameter on performance of powered tractor wheels ..... T 838
- Reed, M. J.**  
Physiomechanics of broiler chickens ..... T 170
- Reed, R. D.**  
Changes necessary in tractor drive trains with engine power increases TM 8
- Reeves, B. G.**  
Design and evaluation of equipment for basal application of systemic insecticides to cotton plants ..... T 179
- Applying systemic insecticides to cotton: an equipment evaluation ..... 646
- Reflectance attachment, A fiber optics ..... 448
- Rehkugler, Gerald E.**  
Screw conveyors—state of the art ..... T 615
- Reints, R. E. Jr.**  
Trajectories of seeds and granular fertilizers ..... T 213
- Bridging the gap with a general-purpose analog ..... T 808
- Rektorik, R. J.**  
Deflection tests and trench conditions for plastic drain pipe ..... T 454
- Polyethylene drainage pipe installation techniques and field performance ..... T 458
- Relation between deflection and strain of freely vibrating wood beams ..... T 796
- Relation between propagation velocity of mechanical waves through soil and soil strength ..... T 471
- Relative humidity, Gravimetric method for determining ..... T 28
- Relative humidity on the electrostatic charging process, Effect of ..... T 201
- Relay control circuits, Mapping ..... T 831
- Reliability and economic analyses for structural designing ..... T 48
- Remson, Irwin**  
Numerical studies of drainage of unsaturated soils ..... T 388
- Renard, K. C.**  
Contribution to regional water table from transmission losses of ephemeral streambeds ..... T 786
- Renn, Charles E.**  
Iron, manganese and hydrogen sulfide ..... WQ 44
- Replogle, John A.**  
Low-pressure-differential measurements in liquid flows ..... T 84
- Reproductive performance of swine in controlled warm environments ..... T 517
- Research and education, The interrelationship of ..... 141

- Research frontiers, Agriculture's international ..... 267
- Research frontiers, Agriculture's national ..... 201
- Research of hysteresis between sorption and desorption isotherms of wheat ..... T 756
- Residence-time distribution in a swept-surface heat exchanger ..... T 508
- Resnickoff, Morton**  
Numerical studies of drainage of unsaturated soils ..... T 388
- Response of germinating corn to temperature and pressure ..... T 539
- Rice, Moisture adsorption characteristics of brown ..... T 448
- Rice, Robert C.**  
Dynamic response of small piezometers T 80
- Richardson, J. B.**  
A vertical screw bin unloader for citrus pulp ..... T 223
- Ridge-planted and plow-planted sugar beets ..... T 128
- Ridgway, R. L.**  
Design and evaluation of equipment for basal application of systemic insecticides to cotton plants ..... T 179
- Applying systemic insecticides to cotton: an equipment evaluation ..... 646
- Roadbanks, Evaluation of climatic, slope and site factors on erosion from unprotected ..... T 9
- Rockwell, T. H.**  
Use of simulation methodology for solution of operational system ..... T 291
- Rodda, E. D.**  
Developments in air supported plastic greenhouses ..... T 652
- Rodent pellets from corn kernels by washing, Separation of ..... T 233
- Role of infiltration in nonlinear watershed analysis processes ..... T 396
- Roller, Warren L.**  
Developing a paste feeding system for swine ..... 82
- Coefficients of kinetic friction of wheat on various metal surfaces ..... T 411
- Reproductive performance of swine in controlled warm environments ..... T 517
- Romig, B. E.**  
Determination and simulation of field machine vibrations ..... T 697
- Ross, I. J.**  
A vertical screw bin unloader for citrus pulp ..... T 223
- Some physical properties of dried citrus pulp ..... T 483
- Rotary-hoe-type devices for soil incorporation, Design and operating characteristics of ..... T 256
- Rotary tillage, Increment of cut-and-rake angle interaction during granular incorporation by ..... T 718
- Rotating screen separator, A vertical ..... 275
- Roth, Lawrence O.**  
Organizing a mailing program to high schools ..... 393
- Runoff for artificial recharge, Use of storm ..... T 678
- Runoff from drainage systems with corn and grass cover, Tile flow and surface T 492
- Runoff: its relation to larger areas, Plot and small watershed ..... T 464
- Runoff pollution, Modeling feedlot ..... T 497
- Runoff, Soil particles and aggregates transported in water ..... T 246
- Runoff stream-flow data, Volume-duration-probability analyses of ..... T 15

# S

- Sammons, William H.**  
Volume-duration-probability analyses of runoff stream-flow data ..... T 15
- Sampler for flumes, Simple sediment ..... 224
- Samuel, Jose**  
Accuracy of fertilizer metering by full-width machines ..... T 62
- Saran, C.**  
Hand-operated grain harvester ..... 502
- Sartz, Richard S.**  
Simple sediment sampler for flumes ..... 224
- Sarver, Ronald D.**  
A power-driven tractor ditcher ..... 204
- Sasser, P. E.**  
Effect of relative humidity on the electrostatic charging process ..... T 201
- Scale models in farmstead engineering ..... 504
- Schacht, C. J.**  
Development of liquid-manure-handling equipment ..... T 161
- Schafer, Robert L.**  
A recording soil surface profile meter ..... 280
- Schertz, C. E.**  
Evaluating shake harvesting of oranges for the fresh fruit market ..... T 577
- Schreiber, D. L.**  
Hydraulic description of recession of shallow flow over a porous bed ..... T 54
- Schroeder, M. E.**  
Dynamic programming method of air allocation in a grain dryer ..... T 96

# Schwab, G. O.

- Tile flow and surface runoff from drainage systems with corn and grass cover ..... T 492
- Colloid movement in a flowing medium with an impressed electric field ..... T 594
- Schwartz, G. M.**  
Effect of pithole drainage on deep ground-water supplies ..... T 643
- Scofield, Francis**  
Finishing materials and methods ..... EH 40
- Scott, B. B.**  
Numerical studies of drainage of unsaturated soils ..... T 388
- Scott, N. R.**  
Heat transfer through masonry walls T 123
- Screening system, Size classifying of granular particles in a vibratory ..... T 568
- Screw conveyors, Dimensional standards and performance-test procedures for ..... T 667
- Screw conveyors—state of the art ..... T 615
- Screw feeders, Effect of pitch, radial clearance, hopper exposure and head on performance of ..... T 685
- Sealing ponds chemically ..... 270
- Sediment removal from flood water by grass filtration ..... T 35
- Sediment sampler for flumes, Simple ..... 224
- Sedimentation, coagulation, and filtration related to farm water supply ..... WQ 27
- Seed, Improving emergence of pelleted vegetable ..... T 658
- Seed pickup, Precision planter using vacuum for ..... T 607
- Seedling emergence, Applying mulches for improving ..... T 626
- Seeds and granular fertilizers, Trajectories of ..... T 213
- Seeds with an air-comparison pycnometer, Porosity determinations of grains and T 693
- Segner, Ido**  
A rainfall simulator with a rotating disk ..... T 74
- Selders, A. W.**  
Mechanical harvesting and handling of processing apples ..... T 43
- Harvesting processing apples mechanically ..... 718
- Selecting farm equipment, A Fortran program for ..... 332
- Sensors and controls for automatic fillers for fruit and vegetable bins ..... T 18
- Separation of rodent pellets from corn kernels by washing ..... T 233
- Separator, A vertical rotating screen ..... 275
- Sequestration, oxidation and adsorption, Neutralization ..... WQ 24
- Serving large single-phase motors on rural lines ..... 508
- Sewell, John I.**  
Sealing ponds chemically ..... 270
- Shanholtz, V. O.**  
Concepts in hydrologic soil grouping T 407
- Shaw, Mark D.**  
Water-treatment processes—heat, silver and ultraviolet ..... WQ 18
- Shaw, Roy**  
Controlled-atmosphere storage of potatoes ..... T 534
- Shear device, An annular ..... T 164
- Sheets, C. E. Jr.**  
Optimum tractor weight for maximum drawbar horsepower ..... T 790
- Shell construction, Performance and use of a mobile formwork system for hyperbolic paraboloid ..... T 600
- Shellenberger, F. A.**  
Effects of cumulative damage due to stress cycles on selective harvesting of coffee ..... T 252
- Shockley, Dell G.**  
Evapotranspiration and farm irrigation planning and management ..... EV 3
- Shop dynamometer tests vs. Nebraska tractor tests ..... TM 30
- Shove, G. C.**  
Temperature gradients in drying grain T 152
- Show ropper, ASAE and an FFA ..... 23
- Shull, Hollis**  
Soil-filtering properties of glass-fiber mat ..... T 635
- Silage distributor for filling bunker silos, A grass ..... T 836
- Silo unloader, New direct-drive ..... T 648
- Silos, A grass-silage distributor for filling bunker ..... T 836
- Simple sediment sampler for flumes ..... 224
- Simulation methodology for solution of operational system problems, Use of T 291
- Simulators for farmstead systems analysis T 806
- Single-phase motors on rural lines, Serving large ..... 508
- Sittler, O. D.**  
Instrumentation and techniques for electrorétinogram studies with insects ..... T 130
- Size classifying of granular particles in a vibratory screening system ..... T 568
- Skin and lung moisture loss from swine ..... T 691
- Sluka, S. J.**  
Stresses in impacted egg shells ..... T 364
- Small electric mills: costs—characteristics ..... 28



<b>Smerdon, Ernest T.</b> A useful compilation of computer technology ..... 32 How rainfall affects shallow channel flow ..... 558 Effect of rainfall on the velocity profile in shallow-channel flow ..... T 330 A useful compilation of computer technology ..... T 805	<b>Southwell, P. H.</b> Accuracy of fertilizer metering by full-width machines ..... T 62 An investigation of four-wheel-drive and tandem-tractor arrangement ..... T 284	<b>Factors affecting the design of the finger bar and knife tobacco defoliators ..... T 264 Vibration studies of tractor operators ..... T 478 Temperature and enthalpy equivalence of thermal radiation ..... T 727</b>
<b>Smith, A. H.</b> Stresses in impacted egg shells ..... T 364	<b>Sowell, R. S.</b> Network analysis and mathematical programming ..... T 820 Sows, Zone cooling for lactating ..... T 444	<b>Sulek, J. J.</b> Shop dynamometer tests vs. Nebraska tractor tests ..... TM 30
<b>Smith, Donald J.</b> Mobile and factory-built houses ..... EH 37	<b>Spadaro, J. J.</b> Instant sweetpotato flakes—factors affecting film thickness on double-drum drier ..... T 157 Sphere thermal radiometry, Back ..... T 780 Spillways, Design and performance of vegetation-lined ..... T 429	<b>Summer-fallow tillage methods based on seasonal tillage-energy requirements, moisture, conservation, and crop yield, Comparison of four ..... T 1</b>
<b>Smith, E. M.</b> Soil moisture measurement using gamma transmission techniques ..... T 205 Energy required to operate a disk furrower in Kentucky bluegrass sod ..... T 333 To harvest stalk-cut tobacco ..... 652 Back sphere thermal radiometry ..... T 780	<b>Splinter, W. E.</b> Effect of relative humidity on the electrostatic charging process ..... T 201 Factors affecting the design of the finger bar and knife tobacco defoliators ..... T 264 Sprinkler irrigation with high salt-content water ..... T 494 Sprinkler systems for turf, Automatic ..... 344 Standards and performance-test procedures for screw conveyors, Dimensional ..... T 667	<b>Swader, F. N.</b> Evaluation of polyethylene canopies as plot covers ..... T 230
<b>Smith, F. G.</b> Evaluating parameters of plywood pallet containers for fruits and vegetables ..... T 701	<b>Stanley, J. M.</b> Studies of slotted-floor swine housing in controlled, semicontrolled and uncontrolled environments ..... T 561	<b>Swanson, N. P.</b> Soil particles and aggregates transported in water runoff under various slope conditions using simulated rainfall ..... T 246 Sweetpotato flakes—factors affecting film thickness on double-drum drier, Instant ..... T 157 Swine-building ventilation design, Exposure factor curves applied to ..... T 619 Swine, Effect of air temperature on performance of growing-finishing ..... T 370 Swine, Effect of air velocity, air temperature, and mean radiant temperature on performance of growing-finishing ..... T 715 Swine housing in controlled, semicontrolled and uncontrolled environments, Studies of slotted floor ..... T 561 Swine in controlled warm environments, Reproductive performance of ..... T 517 Swine, Skin and lung moisture loss from ..... T 691 Switching circuits, Boolean algebra analysis of ..... T 829 System problems, Use of simulation methodology for solution of operational ..... T 291 Systems analysis, Data needs for agricultural ..... T 303 Systems approach to harvesting alfalfa hay, A ..... T 318 Systems engineering in agriculture—a symposium ..... T 289
<b>Smith, R. E.</b> Effect of rapid processing on the properties of freshly slaughtered pork ..... T 185 Analyses on transient heat transfer from anomalous shapes ..... T 236	<b>Stapleton, H. N.</b> Energy requirements for tillage of desert soils ..... 24 Analyzing field machinery systems by computer ..... 202 Cotton harvest-defoliation scheduling ..... T 226 Data needs for agricultural systems analysis ..... T 303 State and county health department cooperation in developing farmstead water-quality improvement ..... WQ 56 Steel foil in agriculture ..... 153 Stepless variable-speed reducer, A ..... 648	<b>T</b>
<b>Smith, S. W.</b> Soil moisture measurement using gamma transmission techniques ..... T 205 To harvest stalk-cut tobacco ..... 652	<b>Stevens, Carl</b> Factors affecting performance of feed mixers ..... T 526	<b>Taiganides, E. Paul</b> Farm-waste management in Europe and India ..... 710
<b>Snell, A. W.</b> Water—our engineering responsibility ..... 707 Measuring hydraulic conductivity by the four-well method ..... T 672	<b>Stewart, E. H.</b> Effect of depth to water table and plant density on evapotranspiration rate in southern Florida ..... T 746	<b>Talbott, John</b> Wood foundations for economy housing ..... EH 57 Frameless glazing system for wood-frame buildings ..... EH 60 Tandem-tractor arrangement, An investigation of the four-wheel-drive and ..... T 284
<b>Snyder, L. H.</b> Coefficients of kinetic friction of wheat on various metal surfaces ..... T 411	<b>Stewart, O. W.</b> Determining thermal properties of a soil and periodic transfer of solar energy in the earth ..... T 359	<b>Tanner, C. B.</b> Comparison of energy balance and mass transport methods for measuring evaporation ..... EV 45
<b>Soderholm, Leo H.</b> Electrical systems for economy housing ..... EH 49	<b>Stewart, R. E.</b> Theoretical analysis of centrifugal threshing and separation ..... T 87 Introduction—systems engineering in agriculture symposium ..... T 289	<b>Taylor, J. H.</b> An annular shear device ..... T 164 Effect of diameter on performance of powered tractor wheels ..... T 838
<b>Soil and periodic transfer of solar energy in the earth, Determining thermal properties of a ..... T 359</b>	<b>Stine, C. M.</b> A method of determining heat transfer through powdered food products ..... T 543	<b>Taylor, P. A.</b> Field measurement of forces and moments on wheatland plow disks ..... T 762
<b>Soil and soil strength, Relation between propagation velocity of mechanical waves through ..... T 471</b>	<b>Stith, D. J.</b> Low-cost housing design standard ..... EH 17 Stochastic models in hydrology ..... T 813	<b>Taylor, P. A. Jr.</b> An empirical model for predicting drainage system performance ..... T 723
<b>Soil bin instrumentation ..... 442</b>	<b>Stout, B. A.</b> New threshing technique for harvesting standing grain ..... T 199 Thermal properties of tart cherries ..... T 489 Theoretical modeling of the wheat plant ..... T 799	<b>Taylor, T. H.</b> Soil moisture measurement using gamma transmission techniques ..... T 205 Energy required to operate a disk furrower in Kentucky bluegrass sod ..... T 333
<b>Soil, Characteristics of flow to diversions and subsurface drains on a sloping Frigipan ..... T 586</b>	<b>Stover, Harold E.</b> Farm pond water-treatment system ..... WQ 49	<b>Teague, Howard S.</b> Developing a paste feeding system for swine ..... 82 Reproductive performance of swine in controlled warm environments ..... T 517 Technical and economic restraints in pulpwood harvesting ..... 206 Technique for measuring intercellular space vapor pressure in foliar tissue, A ..... T 451 Techniques of program planning and development ..... WQ 53 Technology programs, Engineering ..... 645 Telephone frost-warning device, A ..... 560 Temperature and enthalpy equivalence of thermal radiation ..... T 727 Temperature, and mean radiant temperature on performance of growing-finishing swine, Effect of air velocity, air ..... T 715 Temperature as the primary variable, Empirical methods of predicting evapotranspiration using air ..... EV 54 Temperature gradients in drying grain ..... T 152 Tensile failure strengths of three agricultural soils, Compressive and ..... T 771 Tensile properties of Kennebec potatoes ..... T 414 Theoretical analysis of centrifugal threshing and separation ..... T 87 Theoretical modeling of the wheat plant ..... T 799 Theory of hysteresis between sorption and desorption isotherms in biological materials ..... T 260
<b>Soil, Field study of subsurface drainage on a slowly permeable ..... T 573</b>	<b>Stress-strain relationships for soil with variable lateral strain ..... T 738</b>	
<b>Soil-filtering properties of glass-fiber mat ..... T 655</b>	<b>Stresses in impacted egg shells ..... T 364</b>	
<b>Soil incorporation, Design and operating characteristics of rotary-hoe-type devices for ..... T 256</b>	<b>Stresses in plywood gusset plates for trusses ..... T 633</b>	
<b>Soil moisture measurement using gamma transmission techniques ..... T 205</b>	<b>Strohmman, R. D.</b> A new equilibrium moisture-content equation ..... T 675	
<b>Soil moisture storage and grain sorghum yield, Effect of dryland leveling on ..... T 523</b>	<b>Strohmman, R. E.</b> New threshing technique for harvesting standing grain ..... T 199 Structural designing, Reliability and economic analyses for ..... T 48 Structure, New ASAE ..... 220 Studies of slotted-floor swine housing in controlled, semicontrolled and uncontrolled environments ..... T 561 Stump to landing harvesting methods for short wood ..... 650 Subsurface drain and diversion discharge comparisons on a sloping Frigipan soil ..... T 590 Subsurface irrigation: how soon a reality? ..... 654	
<b>Soil movement throughout a field, A method of computing ..... T 742</b>	<b>Sucher, R. W.</b> Separation of rodent pellets from corn kernels by washing ..... T 233 Sugar beets, Ridge-planted and plow-planted ..... T 128	
<b>Soil particles and aggregates transported in water runoff under various slope conditions using simulated rainfall ..... T 246</b>	<b>Suggs, C. W.</b> Impact damage to peanuts and its effects on germination, seedling development, and milling quality ..... T 248	
<b>Soil profile modification by backhoe mixing and deep plowing ..... T 775</b>		
<b>Soil strength on corn root penetration, Effect of ..... T 281</b>		
<b>Soil strength profiles, Portable recording penetrometer measures ..... 348</b>		
<b>Soil, Subsurface drain and diversion discharge comparisons on a sloping Frigipan ..... T 590</b>		
<b>Soil surface profile meter, A recording ..... 280</b>		
<b>Soil transportation by raindrop splash, An analysis of ..... T 166</b>		
<b>Soil-water redistribution, Infiltration and ..... T 382</b>		
<b>Soil with variable lateral strain, Stress-strain relationships for ..... T 738</b>		
<b>Soils, Compressive and tensile failure strengths of three agricultural ..... T 771</b>		
<b>Soils, Dynamic shearing resistance of ..... T 439</b>		
<b>Solar, atmospheric, and terrestrial radiation received by shaded and unshaded animals ..... T 622</b>		
<b>Solar energy in the earth, Determining thermal properties of a soil and periodic transfer of ..... T 359</b>		
<b>Solar energy transmitted by rigid plastic greenhouses, Analytical determination of direct visible ..... T 564</b>		
<b>Solar radiation—adequacy of present USA and world networks ..... EV 62</b>		
<b>Solid lubricants protect heavy machinery, How ..... 268</b>		
<b>Some aerobic decomposition properties of dairy-cattle manure ..... T 546</b>		
<b>Some methods of calculating unsaturated permeability ..... T 400</b>		
<b>Some physical properties of dried citrus pulp ..... T 483</b>		
<b>Sooter, C.</b> Improving emergence of pelleted vegetable seed ..... T 658		
<b>Sorenson, J. W. Jr.</b> Design methods for controlled-environment storage of grain ..... T 366		



- Thermal defoliation of cotton ..... T 24
- Thermal properties of a soil and periodic transfer of solar energy in the earth, Determining ..... T 359
- Thermal properties of tart cherries ..... T 489
- Thermal radiation, Temperature and enthalpy equivalence of ..... T 727
- Thermal radiometry, Back sphere ..... T 780
- Thermistor transducer to measure very low air velocity, Design and testing of a ..... T 769
- Thiel, T. J.  
Characteristics of flow to diversions and subsurface drains on a sloping Frigipan soil ..... T 586
- Thin-layer hay drying ..... T 645
- Thomas, A. W.  
Measuring hydraulic conductivity by the four-well method ..... T 672
- Thomas, E. Llewellyn  
Machine-man interface ..... 496
- Thomas, H. R.  
Studies of slotted-floor swine housing in controlled, semicontrolled and uncontrolled environments ..... T 561
- Thomas, James R.  
Land leveling ..... 146
- Thompson, R. A.  
Porosity determinations of grains and seeds with air-comparison pycnometer ..... T 693
- Three-pen system of broiler management ..... 148
- Threshing technique for harvesting standing grain, Newell ..... T 199
- Throckmorton, Ray L. Jr.  
Predicting tillage trends ..... 145
- Tide gates, A method for hydraulic design of ..... T 139
- Tile flow and surface runoff from drainage systems with corn and grass cover ..... T 492
- Tile flow on a lake plain soil, Observed and predicted ..... T 142
- Tillage energy applications ..... T 843
- Tillage, Increment of cut-and-rake angle interaction during granular incorporation by rotary ..... T 718
- Tillage of desert soils, Energy requirements for ..... 24
- Tillage trends, Predicting ..... 145
- Timing an event dependent on ground speed ..... T 66
- Tips on designing an animal environmental chamber ..... 394
- To comprehend Ford's computer complex ..... 723
- To harvest stalk-cut tobacco ..... 652
- To prevent contamination of processed food ..... 404
- To record plant growth ..... 720
- Tobacco defoliators, Factors affecting design of finger-bar and knife ..... T 264
- Tobacco grading, Development of criteria for selecting fluorescent lights for ..... T 515
- Tobacco, To harvest stalk-cut ..... 652
- Tolsted, David N.  
Chart holder uses old typewriter parts ..... 154
- Total confinement systems for cattle ..... 210
- Tractor, A protective canopy for the farm ..... 496
- Tractor, Changes necessary to turbocharge a Lavona-type Diesel ..... TM 38
- Tractor ditcher, A power-driven ..... 204
- Tractor drive trains with engine power increases, Changes necessary in ..... TM 8
- Tractor engine, Effects of overfueling or turbocharging a direct injection Diesel TM 3
- Tractor operators, Vibration studies of ..... T 478
- Tractor tests, Shop dynamometer tests vs. Nebraska ..... TM 30
- Tractor weight for maximum drawbar horsepower, Optimum ..... T 790
- Tractor-wheel performance, Parameters for Part I—Definitions ..... T 420
- Tractor-wheel performance, Parameters for Part II—Description and Use ..... T 424
- Tractor wheels, Effect of diameter on performance of powered ..... T 838
- Trajectories of seeds and granular fertilizers ..... T 213
- Transducer to measure very low air velocity, Design and testing of a thermistor ..... T 769
- Transpiration—the individual leaf or plant, Plant factors and ..... EV 14
- Transpiration: the plant community, Plant factors and ..... EV 17
- Trusses, Stresses in plywood gusset plates for ..... T 633
- Tuite, J. F.  
Growth and effect of molds in stored high-moisture corn ..... T 730
- Turbocharge a Lavona-type Diesel tractor, Changes necessary to ..... TM 38
- Turbocharging a direct injection Diesel tractor engine, Effects of overfueling or turbulent diffusion of a bacterial aerosol in food packaging areas ..... T 748
- Turkeys as affected by environmental temperature, Performance of growing ..... T 793
- Turner, F. Jr.  
Sprinkler irrigation with high salt-content water ..... T 494
- Turner, W. K.  
Impact damage to peanuts and its effects on germination, seedling development, and milling quality ..... T 248
- Turnquist, P. K.  
Size classifying of granular particles in a vibratory screening system ..... T 568
- Turrel, John D.  
Industry cooperation in developing state farmstead water-quality improvement programs ..... WQ 55
- Tweedy, Robert H.  
Steel foil in agriculture ..... 153
- ## U
- Use of simulation methodology for solution of operational system problems ..... T 291
- Use of storm runoff for artificial recharge ..... T 678
- Useful compilation of computer technology, A ..... 32
- Useful compilation of computer technology, A ..... T 805
- Using large electric motors ..... 84
- ## V
- van Bavel, C. H. M.  
Combination (Penman type) methods EV 48
- Van Heerden, W. M.  
An analysis of soil transportation by raindrop splash ..... T 166
- Van Mater, P. D. Jr.  
Timing an event dependent on ground speed ..... T 66
- van Nest, David J.  
Operations research on egg management ..... T 752
- Van Syoc, W. M.  
The ASAE quick-attaching three-point hitch coupler standard ..... 80
- VandenBerg, G. E.  
Effect of diameter on performance of powered tractor wheels ..... T 838
- Vapor pressure in foliar tissue, A technique for measuring intercellular space ..... T 451
- Vegetable seed, Improving emergence of pelleted ..... T 658
- Vegetables, A method of evaluating cushioning materials used in mechanical harvesting and handling of fruits and ..... T 711
- Vegetables, Evaluating parameters of plywood pallet containers for fruits and ..... T 701
- Vegetation-lined spillways, Design and performance of ..... T 429
- Velocity, air temperature and mean radiant temperature on performance of growing-finishing swine, Effect of air T 715
- Veilosity, Design and testing of a thermistor transducer to measure very low air ..... T 769
- Velocity profile in shallow-channel flow, Effect of rainfall on ..... T 330
- Ventilation and insulation requirements based on calorimetric data and psychrometric relationships, Design of poultry laying-house ..... T 512
- Ventilation design, Exposure factor curves applied to swine-building ..... T 619
- Ventilation-dilution phenomenon, A constant temperature model of the ..... T 188
- Ventilation problems, Permeability, a solution to ..... 34
- Verma, B. P.  
Energy required to operate a disk furrower in Kentucky bluegrass sod ..... T 333
- Back sphere thermal radiometry ..... T 780
- Vertical rotating screen separator, A ..... 275
- Vertical screw bin unloader for citrus pulp, A ..... T 223
- Vibration studies of tractor operators ..... T 478
- Vibrations, Determination and simulation of field machine ..... T 697
- Vibratory tillage tools, Future of ..... T 78
- Volume-duration-probability analyses of runoff stream-flow data ..... T 15
- Vomocil, J. A.  
Compressive and tensile failure strengths of three agricultural soils ..... T 771
- Von Bargen, Kenneth  
A systems approach to harvesting alfalfa hay ..... T 318
- ## W
- Wadsworth, J. I.  
Instant sweetpotato flakes—factors affecting film thickness on double-drum drier ..... T 157
- Waters in a closed-die process, Power requirements for forming ..... T 150
- Wallace, D. E.  
Contribution to regional water table from transmission losses of ephemeral streambeds ..... T 786
- Wang, Jaw-Kai  
Effects of cumulative damage due to stress cycles on selective harvesting of coffee ..... T 252
- Wang, L.  
Tillage energy applications ..... T 843
- Water and man ..... 331
- Water, Biological and radiological properties of ..... WQ 9
- Water—our engineering responsibility ..... 707
- Water: physical and chemical properties, Nature of ..... WQ 5
- Water-quality improvement program ..... WQ 50
- Water-quality improvement program in Pennsylvania ..... WQ 52
- Water-quality improvement programs in Ohio ..... WQ 51
- Water-quality improvement, State and county health department cooperation in developing farmstead ..... WQ 56
- Water-resource management, Evapotranspiration and ..... EV 13
- Water softener of today ..... WQ 42
- Water, Sprinkler irrigation with high salt content ..... T 494
- Water supply, Sedimentation, coagulation and filtration related to farm ..... WQ 27
- Water table and plant density on evapotranspiration rate in southern Florida, Effect of depth to ..... T 746
- Water-table fluctuation in the soil series of the Willamette Catena ..... T 405
- Water table from transmission losses of ephemeral streambeds, Contribution to regional ..... T 786
- Water treatment, Comparison of chlorine, bromine, and iodine for use in farmstead ..... WQ 12
- Water-treatment processes—heat, silver and ultraviolet ..... WQ 18
- Water-treatment system, Farm pond ..... WQ 49
- Water vapor by cereal grains and their products, Adsorption and desorption of ..... T 549
- Water yield predictions, Evapotranspiration and ..... EV 8
- Watershed runoff: its relation to larger areas, Plot and small ..... T 464
- Watershed studies in southern Saskatchewan, Comparative ..... T 502
- Watts, D. G.  
An empirical model for predicting drainage system performance ..... T 723
- Weather forecasts for agriculture, Evapotranspiration and ..... EV 10
- Weather, Influence of shade height on physiological responses of cattle during hot ..... T 433
- Weber, J. A.  
Effects of overfueling or turbocharging a direct injection Diesel tractor engine ..... TM 3
- Effects of overboring a Diesel engine ..... TM 16
- Wegscheid, Edmund L.  
Soil bin instrumentation ..... 442
- Weight-transfer hitch for pull-type implements, A ..... T 847
- Welch, G. Burns  
Effects of sustained load and load cycling on yielding of a rigid frame foundation of clayey soil ..... T 70
- Wheat on various metal surfaces, Coefficients of kinetic friction of ..... T 411
- Wheat plant, Theoretical modeling of the ..... T 799
- Wheat, Research of hysteresis between sorption and desorption isotherms of ..... T 756
- Wheat and plow disks, Field measurement of forces and moments on ..... T 762
- Wheel runoff sampler, Field tests on Co-shockon-type ..... T 133
- Wheels, Effect of diameter on performance of powered tractor ..... T 838
- Whisler, F. D.  
Rainfall infiltration into a vertical soil column ..... T 391
- White, G. M.  
Development of criteria for selecting fluorescent lights for tobacco grading ..... T 515
- White, H. D.  
Physiomechanics of broiler chickens ..... T 170
- White, R. K.  
Apparatus for determination of bulk modulus and compressibility of materials ..... T 670
- Whitney, J. D.  
Dielectric properties of peanuts ..... T 38
- Whitney, L. F.  
Design parameters for drying fluidized alfalfa leaves ..... T 467
- Whitney, P. L.  
Hydraulically controlled gates for automatic surface irrigation ..... T 639
- Who's afraid of the fuel cell? ..... 142
- Wiersma, Frank  
Nonevaporative convective heat transfer from the surface of a bovine ..... T 733
- Wilkes, L. H.  
Design and evaluation of equipment for basal application of systemic insecticides to cotton plants ..... T 179
- Applying systemic insecticides to cotton: an equipment evaluation ..... 646
- Willey, B. F.  
The water softener of today ..... WQ 42

Willis, A. H.	
Flow regimes of grains in inclined ducts	T 136
Willis, W. O.	
Cup anemometer behavior with respect to attack angle variation of the relative wind	T 376
Willrich, T. L.	
Water-quality improvement program	WQ 50
Wilson, L. G.	
Sediment removal from flood water by grass filtration	T 35
Winn, P. N. Jr.	
Measuring cutting forces of Maryland tobacco in relation to mechanical harvester design	T 12
Wiser, E. H.	
Stochastic models in hydrology	T 813
Mapping relay control circuits	T 831
Witz, R. L.	
Effect of low-volume and high-volume aeration on a hog lagoon	T 475
Effect of air velocity, air temperature and mean radiant temperature on performance of growing-finishing swine	T 715
Design and testing of a thermistor transducer to measure very low air velocity	T 769
Performance of growing turkeys as affected by environmental temperature	T 793
Witzel, S. A.	
For loose-cow housing: cold deep-bedded pack vs. cold free stalls	86

Wolfe, C. A. Jr.	
Deflection tests and trench conditions for plastic drain pipe	T 454
Wolfe, R. R.	
Flow characteristics in the pneumatic conveying of chopped forage	T 320
Wood beams, Relation between deflection and strain of freely vibrating	T 796
Wood finish, A low-cost exterior	219
Wood foundations for economy housing	EH 57
Wood, Stump to landing harvesting methods for short	650
Wooding, N. H. Jr.	
Water-quality improvement program in Pennsylvania	WQ 52
Woolley, Joseph T.	
Plant factors and transpiration—the individual leaf or plant	EV 14
Wright, M. E.	
Design and operating characteristics of rotary hoe type devices for soil incorporation	T 256
X-Y-Z	
Yates, W. E.	
Drift hazards related to ultra-low-volume and diluted sprays applied by agricultural aircraft	T 628
Yoerger, R. R.	
Trajectories of seeds and granular fertilizers	T 213

Effects of overfueling or turbocharging a direct injection Diesel tractor engine	TM 3
A new equilibrium moisture-content equation	T 675
Bridging the gap with a general-purpose analog	T 808
Young, D. F.	
Dynamic shearing resistance of soils	T 439
Young, J. H.	
Analytical description of moisture sorption of cured tobacco	T 31
Theory of hysteresis between sorption and desorption isotherms in biological materials	T 260
Research of hysteresis between sorption and desorption isotherms of wheat	T 756
Young, R. A.	
A method of computing soil movement throughout a field	T 742
Zahradnik, J. W.	
Residence-time distribution in a swept-surface heat exchanger	T 508
Zaslavsky, Dan	
Crop yield response to nonuniform application of irrigation water	T 196
Zero hour is now	719
Ziegler, G. M., Jr.	
Instant sweetpotato flakes—factors affecting film thickness on double-drum drier	T 157
Zoerb, Gerald C.	
Instrumentation and measurement techniques for determining physical properties of farm products	T 100
Zone cooling for lactating sows	T 444

